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THE

MISCELLANEOUS DOCUMENTS

OF THE

SENATE OF THE UNITED STATES

FOR THE

SECOND SESSION OF THE FORTY-EIGHTH CONGRESS, AND THE SPECIAL SESSION OF THE SENATE CONVENED MARCH 4, 1885.

IN EIGHT VOLUMES.

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48TH CONGRESS, 2d Session. } SENATE. { MIS. DOC. No. 72.

ASTRONOMICAL

AND

METEOROLOGICAL OBSERVATIONS

MADE DURING

THE YEAR 1882,

AT THE

UNITED STATES NAVAL OBSERVATORY.

VICE-ADMIRAL S. C. ROWAN, U. S. N.,
SUPERINTENDENT.

PUBLICATION AUTHORIZED BY A CONCURRENT RESOLUTION OF THE FORTY-EIGHTH CONGRESS.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1885.

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ERRATA.

VOLUME FOR 1880.

Page xxx Division of Circle B under the microscopes when the nadir was observed should be each increased 180°.
Page 190, No. 765, Precession, for $3^s.819$ read $3^s.809$.
Page 194, No. 911, Precession, for $2^s.347$ read $2^s.447$.

VOLUME FOR 1881.

Page 184, No. 699, Precession, for $2^s.246$ read $2^s.524$.

VOLUMES FOR 1881 AND 1882.

Throughout the two volumes for standard sidereal clock, for Kessels No. 1324 read Parkinson and Frodsham No. 611.

For the description of the sidereal clock in both volumes substitute the following:

The clock has a mercurial pendulum and the connection with the chronograph is effected in the usual way by means of a platinum point at the lower end of the pendulum and a small globule of mercury. The mercury is so placed that at each oscillation of the pendulum, and at the middle of its arc, the platinum point lightly touches the surface of the mercury and closes the galvanic circuit.

VOLUME FOR 1882.

Page xiv, "*arrangement of work*," after *line* 5 insert, Commander W. T. Sampson was assistant to the Superintendent after January 18.

Page xiv, after *fifth* line from bottom of page, insert:

On Oct. 18, the 9.6-inch Equatorial, the Comet-seeker, the Transit, the Prime Vertical Transit, and the Mural Circle were transferred to the charge of Commander W. T. Sampson, who was assisted on the Transit by Lieut. U. R. Harris from September 6, and on the Prime Vertical Transit by Lieut. R. R. Ingersoll from October 1, and by Lieut. C. G. Bowman from September 1.

Page xiv, "*arrangement of work*," after *line* 8, insert:

Assistant Astronomer Miles Rock was detailed for duty with the Santiago Transit-of-Venus party on September 1.

After *line* 12, insert:

Ensign S. J. Brown was ordered to report to the officer in charge of the Transit Circle for instruction.

Page xiv, after *third line* from bottom of page, insert:

Master W. E. Sewell was employed in the examination of sextants and other instruments after August 17.

Page xxii, after *computers*, in the *seventh* line, insert: and two line officers for a portion of the year.

Page 5, No. 38, Mean thread and App. R. A., for 20^m read 21^m.
Page 5, No. 39, Mean thread and App. R. A., for 20^m read 21^m.
Page 31, No. 13, Inst. Correction, for 6′ 33″.73 read 4′ 0″.61.
Page 31, No. 13, App. N. P. D., for 59° 1′ 7″.5 read 58° 58′ 34″.4.
Page 68, No. 4, App. N. P. D., for 26° 35′ read 22° 45′.
Page 72, No. 26, in place of the whole line as printed, insert after the name the following:

	m. s.	s.	s.	° ′ ″	′ ″	″	h. m. s.	s.	° ′ ″	″
3	8 35.77	−0.90	−29.89	22 44 5.40	+4 55.48	+23.8	11 8 4.98	−2.11	73 55 45.9	−17.2

Page 124, ξ^2 Ceti, N. P. D. of Ephemeris, for 10″.30 read 10″.70.
Page 136, Groombridge 4163, N. P. D. of Ephemeris, for 46″.30 read 46″.82.
Page 148, σ Cancri (*med.*) reject the entire observation.
Page 148, σ^3 Cancri, for σ^3 Cancri read σ^2 Cancri (*med.*)
Page 148, σ^6 Cancri, after the observation of April 17, insert the following:

		s.	″
April 24	W.	2.33	27.4
Mean		2.62	27.30

Page 174, No. 302, for Brisbane 2091 read Brisbane 2071.

REPORT OF THE SUPERINTENDENT OF THE NAVAL OBSERVATORY.

UNITED STATES NAVAL OBSERVATORY,
Washington, October 28, 1882.

SIR: I have the honor to submit herewith a report of the work of the Naval Observatory during the past year.

I assumed the direction of the Observatory on the 1st of July last, relieving Commander W. T. SAMPSON, who had been appointed to act temporarily as Superintendent after the death of Rear-Admiral JOHN RODGERS.

THE 26-INCH EQUATORIAL.

This instrument has been in charge of Prof. A. HALL, with Prof. E. FRISBY, as assistant. The instrument is in good order and has been used constantly during the past year in observations of the satellites of the outer planets and of double stars. A few observations also have been made of comets when very faint.

In addition to his regular work on the 26-inch Equatorial as assistant to Professor HALL, Professor FRISBY has continued to make observations of comet *b* of 1881. His last observation was on January 19 of the present year. This, it is believed, is the latest observation of that comet that has been made anywhere. The comet Wells was also observed by him on the 9½-inch Equatorial from March 29 to July 10. Eleven observations were made and elements computed, which were sent to the Astronomische Nachrichten. Three observations of BARNAND'S comet were also made.

The great comet of 1882 was likewise observed by Professor FRISBY, and elements and an ephemeris computed, which were published in various astronomical and scientific papers, and proved to be very accurate. Eight observations of this comet have been made by Professor FRISBY to the present date.

THE TRANSIT CIRCLE.

This instrument, under the direction of Prof. J. R. EASTMAN, has been employed on the same kind of work as last year, and with the same force of observers, except that Assistant MILES ROCK was detailed on September 1 for work with a Transit of Venus party in Chili, and Ensign S. J. BROWN was assigned to duty on the Transit Circle in his place.

The number of observations made since October 12, 1881, is 4,800 Of these observations 96 were of the sun, 63 of the moon, 176 of major planets, 80 of minor planets, and 2 of comets.

THE 9½-INCH EQUATORIAL AND COMET-SEEKER.

These instruments, also under the direction of Professor EASTMAN, have been used in the observations of comets, occultations, the phenomena of Jupiter's satellites, and in verifying the places of asteroids before they can be found with the Transit Circle.

The meteorological department has continued the same as last year.

Corrections to the mean time and motor clocks for the time-service have been furnished by observers on the Transit Circle until relieved of this duty September 6.

PRIME VERTICAL.

This instrument is being placed in adjustmeut, and will be employed by Lieuts R. R. INGERSOLL and C. G. BOWMAN in a series of observations to determine the constant of aberration.

NAUTICAL INSTRUMENTS.

It is proposed to employ the facilities of the Observatory to test and regulate the instruments used in the service for the purpose of navigation in the same manner that chronometers are now tested.

Master W. E. SEWELL has been placed in charge of this branch, and is making progress with the work.

A considerable number of sextants have been examined to determine errors of eccentricity. This examination has developed the fact that these instruments are subject to many sources of error, and that the instruments of some makers are much superior to others. A detailed report will be made when the work is sufficiently advanced.

CHRONOMETERS.

This department of the Observatory work is in charge of Lieut. E. K. MOORE, assisted by Lieut. U. R. HARRIS.

There are at present in the chronometer room 218 chronometers, of which 15 are ready for issue, 1 is on trial, 72 require repairs, and will be repaired as wanted for issue, and 130 are condemned to be used only as "hacks."

During the past year 54 have been received from vessels and other sources of service, most of which have been permitted to run down for repairs, having run their allotted time (four years) since being cleaned; 68 have been issued to vessels, "Transit of Venus Commission," and for other service; 45 have been cleaned and repaired, and there are 20 undergoing repairs at T. S. & J. D. NEGUS'S, New York, and 6 at WILLIAM BOND & SON'S, Boston.

One new chronometer was purchased from T. S. & J. D. NEGUS, an improved break-circuit sidereal, but as it was issued immediately for use in the Transit of Venus, it was not given the usual six months' trial.

The standard of chronometers issued for navigation purposes has been considerably raised, and is susceptible of being further improved. A better method of testing chronometers is now under consideration, and will soon be submitted to the Department.

TRANSMISSION OF TIME SIGNALS.

This work is in charge of the officers having the care of the chronometers. The time continues to be sent over the wires of the Western Union Telegraph Company, as stated in last report, and time-balls are dropped at New York and Washington.

The ball at New York is dropped from a staff on the top of the Western Union Telegraph Company's building, at New York noon, for the meridian of the City Hall, which is $4^h\ 56^m\ 01^s.6$ west from Greenwich, and is dropped by direct connection with the Naval Observatory. This ball has occasionally failed, owing to interruptions in the circuit between the Observatory and New York. No failure has occurred in the dropping of the ball at the Observatory, but on one occasion the ball was dropped three seconds too soon by reason of laborers in the building interfering with the wires.

Since last report a time-ball has been constructed and connections have been made at the Washington navy-yard, and a ball is now dropped there daily, simultaneously with that at the Observatory.

The fire-alarm bells continue to be struck daily at 7 a. m., 12 m., and 6 p. m., and the horological establishments of Washington get their daily comparisons through the fire-alarm circuit from the Observatory.

In September the care of the mean-time standard clock and the determination of its errors were transferred to this department of the Observatory.

The east transit instrument was put in adjustment by Commander SAMPSON, and is now used for observing time stars. The same officers have charge of and regulate the motor clock which controls time-pieces in several departments of the Government.

The electrical connections within the building, which are in the immediate charge of Mr. GARDNER, remain without change, except such as was required by the use of the transit instrument and the prime vertical, neither of which instruments had been in use for several years.

TRANSIT OF VENUS.

Professor HARKNESS has been principally occupied in fitting out the parties for observing the approaching Transit of Venus and in reducing the zone observations made in Chili during the years 1850, 1851, and 1852, by the astronomical expedition to the southern hemisphere, under the late Capt. JAMES M. GILLISS.

The reduction of these zones is now so far advanced that a card catalogue of all the stars has been formed, each star occupying a single card.

The total number of stars is about 17,000. They have been examined for accidental errors up to the end of twenty-one hours, but it yet remains to examine them for systematic errors.

Everything relating to the organization of the Transit of Venus parties is confided by law to the Transit of Venus Commission; but as most of the executive work has been done at the Observatory, it may be proper to refer to it here.

The instruments used for the last Transit have been examined and repaired; all necessary changes have been made in them, and some new instruments have been purchased.

At a very early stage of its deliberations the Commission decided to rely mainly upon the photographic method of observing, and, to ascertain the most suitable kind of emulsion, an extensive series of experiments was made by Mr. JOSEPH A. ROGERS, who has also prepared all the emulsion needed for the various parties.

The number of parties organized is the same as at the last Transit, namely, eight, of which four will remain in the United States, and the other four have already departed for the southern hemisphere.

The names of the persons composing the various parties, and the stations to which they have been sent, are as follows:

FOREIGN STATIONS.

Cape of Good Hope.

Prof. SIMON NEWCOMB, U. S. N, chief astronomer;
Lieut. T. L. CASEY, U. S. A., assistant astronomer;
Ensign J. H. L. HOLCOMBE, U. S. N., additional assistant astronomer;
Mr. JULIUS ULKE, Washington, D. C., photographer.

Santa Cruz, Patagonia.

Lieut. SAMUEL W. VERY, U. S. N., chief astronomer;
Mr. O. B. WHEELER, Detroit, Mich., assistant astronomer;
Mr. WILLIAM BELL, Philadelphia, Pa., photographer;
Mr. IRVIN STANLEY, Indianapolis, Ind., assistant photographer.

Santiago de Chile.

Prof. LEWIS BOSS, Dudley Observatory, Albany, N. Y., chief astronomer;
Mr. MILES ROCK, Naval Observatory, Washington, assistant astronomer;
Mr. THEO. C. MARCEAU, Washington, D. C., photographer;
Mr. CHAS. S. CUDLIP, Washington, D. C., assistant photographer.

New Zealand.

Mr. EDWIN SMITH, Coast and Geodetic Survey, chief astronomer;
Mr. HENRY S. PRITCHETT, Saint Louis, Mo., assistant astronomer;
Mr. AUGUSTUS STORY, Boston, Mass., photographer;
Mr. GUSTAV THEILKUHL, Washington, D. C., assistant photographer.

HOME STATIONS.

San Antonio, Tex.

Prof. ASAPH HALL, U. S. N., chief astronomer;
Mr. R. S. WOODWARD, Detroit, Mich., assistant astronomer;
Mr. D. R. HOLMES, Milford, Del., photographer;
Mr. GEORGE H. HURLBUT, Belvidere, Ill., assistant photographer.

Cedar Keys, Fla.

Prof. J. R. EASTMAN, U. S. N., chief astronomer;
Lieut. JOHN A. NORRIS, U. S. N., assistant astronomer;
Mr. GEORGE PRINCE, photographer Treasury Department, photographer;
Mr. GEORGE F. MAXWELL, Washington, D. C., assistant photographer.

Fort Selden, N. Mex.

Prof. GEORGE DAVIDSON, Coast and Geodetic Survey, chief astronomer;
Mr. J. S. LAWSON, Coast and Geodetic Survey, assistant astronomer;
Mr. J. F. PRATT, Coast and Geodetic Survey, second assistant astronomer;
Mr. D. C. CHAPMAN, Coast and Geodetic Survey, photographer;
Mr. T. S. TAPPAN, Bellaire, Ohio, assistant photographer.

Washington, D. C.

Prof. WILLIAM HARKNESS, U. S. N., chief astronomer.
(The other members of the party have not yet been decided upon.)

LIBRARY.

The library contains about 10,000 volumes, classified as follows: Works on astronomy, mathematics, physics, meteorology, geography, geodesy, navigation, transactions of learned societies, and scientific periodicals.

One hundred and fifty have been added by purchase since last report, and an equal number by exchange. Twenty volumes have been bound, and one hundred and seventy are now at the Government bindery.

The books, pamphlets, etc., are catalogued according to the card system, and a catalogue list is being prepared in conformity with the department's instructions.

The annual volume for 1877 has been distributed to the various scientific institutions of this and other countries. The demand for these publications is much in excess of the ability to supply them.

The volume for 1878 has been received from the bindery and will be distributed at once.

BUILDINGS.

During the past few months the buildings have been put in as thorough repair as the money available would permit. A large sum would be necessary to make all the repairs and alterations that are required, but in view of the possibility of removing the Observatory within a few years, it has been considered best to limit the outlay upon these buildings to the smallest amount that would properly protect the instruments, books, and other public property.

Very respectfully, your obedient servant,

S. C. ROWAN,
Vice-Admiral, Superintendent.

Commodore JNO. G. WALKER,
Chief of Bureau of Navigation, Washington, D. C.

GENERAL INTRODUCTION.

The Observatory was originally built as a depot of charts and instruments for the Navy, and was fully described in a "Report on the Plan and Construction of the Depots of Charts and Instruments, with a description of the instruments," etc., made by Lieut. JAMES M. GILLISS, U. S. N., to the Secretary of the Navy, in February, 1845, and published as Senate Document No. 114, Twenty-eighth Congress, second session. A more general description, illustrated by plans and drawings, may be found in the volumes of Washington Observations for 1845, 1865, and 1874.

Position of the Observatory.—The following clause relating to the meridian of the Observatory is found in the naval appropriation bill passed by Congress September 28, 1850: "The meridian of the Observatory at Washington shall be adopted and used as the American meridian for all astronomical purposes, and the meridian of Greenwich shall be adopted for all nautical purposes."[1] The latitude deduced from observations with the Mural Circle in 1845 and 1846 was $+ 38° 53' 39''.23$;[2] and that value was used in the reduction of all observations with the Mural Circle down to 1878. The observations made with the same instrument from 1861 to 1864, inclusive, give a latitude $+ 38° 53' 38''.8$;[3] which has been used in the reduction of observations with the Transit Circle. The final north polar distances of objects observed with the Transit Circle in any year depend upon all the observations of circumpolar stars made during that year.

The longitude and the latitude of the Observatory are reckoned from the center of the old dome, which is built over the center of the main building.

The telegraphic determination of the longitude from Greenwich depends almost entirely upon the work of the United States Coast Survey. The following data are obtained from the official reports of that office.

In August, 1872, the longitude was given as—

$$5^h\ 8^m\ 12^s.06 \pm 0^s.23,$$

and in August, 1873, it was announced by the assistant in charge of the office that the Coast Survey had made three independent determinations, with the following results:

	h.	m.	s.
In 1866 - - - - - - - - - - - - - -	5	8	12.11
1870 - - - - - - - - - - - - - -			12.10
1872 - - - - - - - - - - - - - -			12.07
The value adopted by the Coast Survey[4] is -	5	8	12.09

[1] Revised Statutes of the United States, section 435.
[2] Washington Observations, 1845, Appendix, p. 116.
[3] Washington Observations, 1864, Introduction, p. xliv.
[4] Report of the Superintendent of the U. S. Coast Survey, 1874, p. 182.

In interpolating tabular positions of the moon and planets, the longitude of the Observatory is assumed to be $5^h\ 8^m\ 12^s.0$.

Since the Observatory was built there have been several changes in the positions of its instruments; and in order to facilitate comparisons of the work done with them at different times, their co-ordinates, measured from the center of the old dome, are given in the following table. The sign + before a co-ordinate indicates that the instrument is north or west of the center of the dome, and the sign — indicates that it is south or east of that point.

Instruments.	Diff. of Latitude.		Diff. of Longitude.	
	Feet.	″	Feet.	s.
Transit:				
January, 1845, to September 2, 1864 . .	0.0	0.00	+ 41.0	+ 0.035
Since October 1, 1864	0.0	0.00	— 42.9	— 0.036
Mural Circle:				
January, 1845, to September 15, 1845 . .	0.0	0.00	+ 32.0	+ 0.027
Since October 1, 1845	0.0	0.00	— 33.9	— 0.029
Meridian Circle:				
January, 1845, to August, 1864	0.0	0.00	— 42.9	— 0.036
Prime Vertical Transit:				
Since January, 1845	+ 45.4	— 0.45	0.0	0.000
Transit Circle:				
January 1, 1866, to June 5, 1869	0.0	0.09	+ 38.4	+ 0.032
Since October 1, 1869	0.0	0.00	+ 77.8	+ 0.066
26-inch Equatorial (center of dome):				
Since November 15, 1873	— 120.1	— 1.19	0.0	0.000

Arrangement of Work.—The system adopted at the time of the revival of the astronomical activity of this establishment in 1861 is still continued. Under this system the observations with each instrument are directed by the officer having it in charge, who is held responsible for the proper performance of the work, and prepares the descriptions, explanations, and discussions of the observations in the annual volumes.

During the year 1882 the details for duty were as follows:

The Transit Circle was under the direction of Prof. J. R. EASTMAN, U. S. N., assisted by Assistant Astronomers A. N. SKINNER, MILES ROCK, and W. C. WINLOCK. Mr. A. S. FLINT was employed as a computer during the year. Mr. W. M. BROWN, jr., was employed on miscellaneous computations during the year. Lieutenants E. LONGNECKER and A. H. VAIL, U. S. N., were also employed as computers on Transit Circle and meteorological work; the former till May and the latter till January 23.

The Mural Circle and the Prime Vertical Transit were not in use during the year.

The 9.6-inch Equatorial was under the direction of Prof. J. R EASTMAN, U. S. N., until October 18.

The 26-inch Equatorial was under the direction of Prof. A. HALL, U. S. N., assisted by Prof. E. FRISBY, U. S. N.

The meteorological observations were made, under the supervision of Prof. J. R. EASTMAN, U. S. N., by the watchmen of the establishment, Messrs. THOMAS HAYS,

DENNIS HORIGAN, NICHOLAS CAHILL, and WILLIAM HENDERSON. On the death of THOMAS HAYS, on November 25, WILLIAM HENDERSON was appointed a watchman.

In the chronometer department the following officers were on duty for the periods specified:

Lieut. Commander FRANCIS S. MORRIS, U. S. N., from January 1 to April 28; Lieut. E. K. MOORE, U. S. N., from January 1 to December 31, and Lieut. U. R. HARRIS, U. S. N., from January 1 to December 31.

Mr. W. F. GARDNER, instrument-maker, executed all necessary repairs and alterations of the instruments and apparatus of the Observatory.

Mr. THOMAS HARRISON, clerk and disbursing officer, had charge of the official correspondence and accounts of the establishment.

The Observatory, being a naval establishment, is under the general supervision of the Bureau of Navigation of the Navy Department.

THE TRANSIT CIRCLE.

During the year 1882 the work with the Transit Circle was carried on under the direction of Prof. J. R. EASTMAN, U. S. N.

The Assistants were Assistant Astronomers A. N. SKINNER, MILES ROCK, and W. C. WINLOCK.

The regular observations with the Transit Circle were confined to the following classes of objects:

(1) Stars of the American Ephemeris, for the determination of clock corrections, azimuth corrections, and the corrections to the zenith point and the assumed latitude.

(2) Sun, Moon, and Planets.

(3) Stars whose occultations were observed at this Observatory and by the various American parties who observed the Transit of Venus in 1874.

(4) Stars selected for standard stars in the formation of a catalogue from the zone observations made here from 1846 to 1849.

(5) The stars of the British Association Catalogue between 120° 0′ and 131° 10′ N. P. D. that have not been observed here three times in right ascension and declination.

THE OBSERVING-ROOM.

The interior of the observing-room, which has been occupied since February 2, 1870, measures 40 feet from north to south and 28 feet 3 inches from east to west. Its height, from the floor to the under side of the shutters which close the opening in the roof, is 23 feet 2 inches at the ridge and 19 feet 6 inches at the eaves. The ridge of the roof extends east and west. The opening in the roof has a width of 3 feet 8 inches, and extends downward, in the north and south walls, to within 7 feet 4 inches of the floor. The portion in the roof is closed by means of four sliding shutters, while that in the north and south walls is closed by double doors.

The inside of the walls of the frame on the east, south, and west sides is covered with tin, and the outside of the frame is protected from the direct rays of the sun by light, wooden louver-work. The northern wall is covered on the outside with tin. The outside is painted white and the inside light blue.

The latitude of the Transit Circle is the same as that of the center of the central dome of the Observatory, but in longitude it is 77.8 feet $= 0^s.066$ west of that point.

DESCRIPTION OF INSTRUMENTS.

THE TRANSIT CIRCLE.

A detailed description of the Transit Circle, together with an account of the investigation of its constants, may be found in the Washington Observations for 1865.

The following condensed description will be sufficient to render intelligible the explanation of the observations and their reduction.

This instrument was made by PISTOR & MARTINS, of Berlin, in 1865. It is of the reversible pattern, and is mounted upon two massive marble piers, with its axis 8 feet 2 inches above the floor. The telescope has a clear aperture of 8.52 inches, and a focal length of 12 feet and 0.7 of an inch The axis is cast in a single piece, into which the steel pivots, 2.09 inches in diameter and 1.7 inch long, are screwed. The Y's are of gun-metal, and the bearing-surfaces are 0.28 inch wide. The distance between the centers of the bearing-surfaces is 3 feet 9.1 inches. The telescope-tube is made in two similar parts, which are bolted to the opposite sides of the cube which forms the central portion of the axis. The cube measures 16.64 inches on the edge.

Two circles, identical in form and size, are attached to the extremities of the axis. Each has ten radial arms, is cast in a single piece weighing about eighty pounds, is 45.3 inches in diameter at the outside edge, and 43.4 inches at the graduation. The circle on the clamp end of the axis, known as circle A, has inlaid upon its face two bands of silver, each 0.13 of an inch wide, the inner one of which is graduated to every 2′, and the outer one to every 10′. The other, known as circle B, has inlaid upon its face a single band of silver 0.13 of an inch wide, which is graduated to every 2′. The graduation of each of these circles is numbered, from left to right, from 0° to 360°, and, as they face in opposite directions, when the telescope is moved in zenith distance the reading of one circle increases while that of the other decreases. The circles are attached to the axis in such a manner that they may be adjusted to bring any desired divisions under the microscopes in a given position of the telescope. Each pier carries four micrometer microscopes placed at the extremities of two diameters, which intersect at right angles, and each of which makes an angle of 45° with the vertical. They are attached by means of metal arms, covered with wood, to the brass disk on the face of the pier, which supports the Y's. The microscopes on the western pier are marked I, II, III, IV; those on the eastern pier, V, VI, VII, VIII. The readings of the former diminish and those of the latter increase as the telescope moves from the zenith toward the south. These microscopes magnify about forty-five diameters; one revolution of their screws is equal to 30″, and their micrometer-heads are divided to 0″.5. Each microscope micrometer is furnished with two parallel threads about 12″ apart, and the reading is made when the image of the division on the limb of the circle appears to be exactly midway between the threads.

In addition to the microscopes already mentioned, each pier carries another, which is employed as a pointer for setting the telescope by means of the coarse graduation on circle A. These microscopes magnify twenty-three diameters, and are placed at the extremities of horizontal radii to the circles; that on the western pier being north and that on the eastern pier south of the axis. The setting microscope in actual use is always the one at the clamp end of the axis.

In the eye-piece of the telescope is a fixed reticule of fifteen vertical and two horizontal threads. The latter have a space of about 8″ between them, and are inserted principally to mark the center of the field. The notation, and the approximate equatorial intervals between each vertical thread and the mean of sets B and D, and C_2, C_3, and C_4, are as follows:

TABLE I.

	s.		s.		s.
I	36.8	C_1	4.1	D_1	8.2
II	24.5	C_2	2.0	D_2	9.6
III or B_1	12.2	IV or C_3	0.0	V or D_3	12.3
B_2	9.7	C_4	2.0	VI	24.5
B_3	8.2	C_5	4.1	VII	36.8

The threads B_1 to B_3 are known as set B; C_1 to C_5 as set C; and D_1 to D_3 as set D. The thread on the western side of the field is always known as I; therefore, when the instrument is reversed the notation of the threads is reversed.

The eye-piece also contains a right-ascension and a zenith-distance micrometer, in each of which the readings increase as the threads move from the micrometer-head. The right-ascension micrometer is provided with a single vertical thread, and is employed in determining the collimation constant, and sometimes in observing the transit of close circumpolar stars when clouds prevent observation at the fixed threads. The value of one revolution of the micrometer-screw is $1^s.024$. The zenith-distance micrometer is furnished with five horizontal threads, two of which were placed about 8″ apart at the beginning of 1881, but on May 13 were changed to about 5″.5 apart. The center of the space between these threads is regarded as the standard middle thread. The value of one revolution of this micrometer-screw is 15″.312. Two of the other threads are placed at a distance of about 2′ 33″ on either side of the middle threads; that nearest the head of the micrometer being called thread A and the other thread B. For observing Mars at the opposition in 1877 a fifth thread, *b*, was inserted beyond B, about 2′ 55″ from the middle threads, and is still in the same position. In observing southern stars, the micrometer-head is below the eye-piece if the clamp is west, and above it when the clamp is east. An increase of micrometer reading is subtractive from the reading of circle A, and additive to that of circle B. A self-registering apparatus is attached to the head of the micrometer-screw in such a manner as to enable the observer to obtain a record of at least four bisections without removing the eye from the eye-piece.[1]

The illumination of the field of view is so arranged that the threads can be shown either *dark* on a bright field or *bright* on a dark field. In the case of bright-field illumination, the color can be varied from deep red to dark blue.

The instrument is provided with five positive eye-pieces, magnifying respectively 135, 158, 186, 279, and 395 diameters. That magnifying 186 diameters is the one generally used.

Collimators.—The Transit Circle is provided with two collimators, having object-glasses of 35.2 inches focal length, and 2.1 inches clear aperture. The eye-pieces have a power of 67. The collimators are mounted on sandstone piers, the one north and the other south of the Transit Circle, and 14.8 feet from the center of the instrument. The field of view of the south collimator, A, contains a vertical thread crossed at its middle point by a horizontal thread. The field of view of collimator B contains

[1] See Astronomische Nachrichten, No. 1493, p. 77.

a fixed vertical thread, and two intersecting threads, movable by a micrometer-screw. Each of the intersecting threads makes an angle of 12° with the vertical. Two levels are provided, by which the collimators may be placed horizontal.

Each side of the central cube of the Transit Circle telescope is pierced with a circular opening, 2.3 inches in diameter, which is closed by a brass cap. By removing the caps, and setting the telescope vertical, the threads of either collimator may be seen from the other.

The standard sidereal clock.—The sidereal clock used in connection with the Transit Circle is Kessels No. 1324. In order to provide against the effects of sudden changes of temperature, the clock, which is situated in the room adjoining the observing-room on the eastern side, is inclosed in a vault of heavy masonry lined with tin, and to prevent the works of the clock from rusting, the dryness of the air is maintained by keeping a fire in the clock-room throughout the year. The clock has a gridiron pendulum, and was formerly connected with the galvanic system of the Observatory by means of a platinum point which projected from about the middle of the pendulum-rod, and at each vibration lightly touched the surface of a small globule of mercury and closed the circuit. At the beginning of 1877 this platinum point was changed to the lower end of the pendulum-bob. The clock is connected with the chronograph in the usual way.

The rate of the clock is controlled by means of small weights, which can be placed in a small cup attached to the pendulum-rod.

The counting-clock.—This clock is attached to a brick pier near the eastern wall of the observing-room. It was made by Parkinson & Frodsham, of London, and has a mercurial pendulum. Its rate is controlled by means of small weights placed on the top of the jar of mercury, and it is kept within less than half a second of the Kessels clock.

This clock contains a delicate spring, furnished with a platinum point, resting upon a small plate of the same metal; the whole so arranged that at the beginning of each minute an arm attached to the arbor of the seconds hand raises the spring and separates the point from the plate for nearly one second. Wires are attached to this apparatus, so that if desired it may be included in the same circuit with the Kessels clock, when, if the beats of the two clocks are nearly in coincidence, the mark for the sixtieth second of the Kessels clock will be omitted on the chronograph.

The standard mean-time clock.—This clock is attached to a stone pier in the chronometer-room, but the officer in charge of the Transit Circle is responsible for furnishing its errors and rates. It was made by Parkinson & Frodsham, of London; has a mercurial pendulum; and its rate is controlled by means of small weights placed on the jar containing the mercury. It is compared with Kessels No. 1324 by causing their beats to be recorded on the same chronograph, generally until a coincidence is obtained.

The chronograph.—This instrument is mounted on a wooden stand near the eastern wall of the observing-room. It is a modified form of the Hipp chronograph, in which regularity of motion in the train is secured by a spring making 132 vibrations a second. The barrel of the chronograph is 6.37 inches in diameter, 13.5 inches long, and revolves once in a minute. A sheet of paper fastened on the chronograph barrel by

thin metallic springs is sufficient to contain the record of two hours' continuous work, and the train requires winding only when the paper is changed. The clock-signals and those of the observer are recorded by a single pen. The armature of the magnet which controls the pen is provided with repeating-points for use in sending signals to distant stations when determining differences of longitude by telegraph. The pen-carriage is moved forward by an endless screw, but may be lifted from its bearings and moved backward or forward so that the pen may be placed upon any desired part of the chronograph sheet. The chronograph stops when the sheet is full. The record is made on paper of the quality of ordinary writing paper with an ink that does not freeze at 0° F. The ink is made in the following proportions:

Water	4 fluid ounces.
Alcohol	2 fluid ounces.
Concentrated glycerine	1 fluid drachm.
Crystallized aniline blue	40 grains.

The ink requires thorough filtering. The pen is of glass, and the lower part of the bulb is drawn out to a fine capillary tube, so that, when ink is placed in the bulb and the pen allowed to rest its whole weight on the paper, it produces a fine sharp line as the barrel revolves.

The barometer and thermometers.—The barometer is of the cistern form, and is suspended on the eastern wall of the observing-room, near its northeastern corner. This instrument has a tube about 0.3 of an inch in diameter, and the graduation may be read by means of a vernier to 0.01 of an inch. The *attached* thermometer has a Fahrenheit scale graduated from + 2° to + 125°. The *external* thermometer has a Fahrenheit scale, and is graduated from − 36° to + 157°. It is suspended 1 foot outside the north front of the observing-room, 13.5 feet above the grass, and is protected from radiation by a shield formed by a double roof of boards, the upper one covered with tin painted white, and three sides of wooden double louver-work. The *upper* thermometer is suspended above the nadir stage, with the bulb nearly as high as the object-glass when the telescope is pointed towards the zenith. It has a Fahrenheit scale graduated from − 4° to + 144°.

Personal equation apparatus.—The apparatus for determining the personal error of an observer in noting the time of the transits of stars is the one described in the introduction to the Transit Circle work in the volume for 1875, and has been used during the year 1882 to determine the personal equation of all the observers with the Transit Circle.

Reflection apparatus.—The apparatus described in the Introduction to the Transit Circle work in the volumes for 1875 and 1876 was used during 1882 for observing stars by reflection.

In practice the rule generally followed was to make the bisections for the direct and reflected observations symmetrical with regard to the central thread; in most cases for reflection observations at threads I and II, and for direct observations at VI and VII.

OBSERVATIONS WITH THE TRANSIT CIRCLE.

Position of axis.—The system of observations with this instrument is based on the plan of reversing the axis at the beginning of each year, and at the same time shifting the position of circle B on the axis so that the north polar distances of the same object will depend on different circle-divisions in different years. During the year 1882 the clamp end of the axis was west.

Arrangement of work.—During the year 1882 there were four observers attached to the Transit Circle, who, with the assistance of two computers, made all the observations and computations except such computing and copying as could be obtained for less than one thousand dollars. As a rule, each observer is held responsible for all the observations to be made during an "observing-day" of twenty-four hours, beginning at 9 a. m

The usual observing-hours are from 9 a. m. to 3 p. m. and from 8 p. m. to an hour late enough to observe whatever small planets may be near opposition. It is a rule to observe the moon whenever it can be seen at time of transit except between 1 and 6 a. m.; and on Sundays the only observations regularly made are those of the moon and of stars necessary for the determination of time and instrumental constants.

Generally, in clear weather, it is designed to observe a group of at least three "time stars" in the forenoon and three in the afternoon, and also a similar number near the beginning and the end of the work at night.

The azimuth constant is considered invariable throughout the "observing-day"; but the collimation and level constants and the zenith-point correction are generally determined at about the middle of the observations for each day and each night. If the observations are prolonged to a very late hour at night these constants are generally determined twice.

The number of observations to be obtained in an "observing-day" has not been fixed, for, with rare exceptions, the zeal of the observers leaves no necessity for fixing a minimum limit.

Method of observing.—A galvanic current, closed by the Kessels clock, controls the chronograph-pen, and all observations of time are made by the aid of its recorded beats. Therefore, the first duty of the observer is to put the counting-clock in coincidence with the Kessels. Then the counting-clock serves to indicate the second corresponding to each beat of the chronograph-pen, and when included in the clock circuit it also indicates the beginning of each minute on the chronograph by causing the pen to omit the mark corresponding to the sixtieth second

The general method adopted in using the Transit Circle is to bring the proper divisions of circle B near the zeros of its micrometer microscopes, and then to measure with the zenith-distance micrometer of the telescope the distance between its zero-point and the image of the object observed. The subdivision of the intervals between consecutive divisions on circle B is thus thrown entirely on the zenith-distance micrometer, and as the arc measured by the micrometer microscopes rarely exceeds 10″ their errors of run are neglected. The graduation of circle B is considered better than that of circle A, and is consequently employed in all measures of zenith distance. Circle A is used only as a setting circle, to indicate the degrees and minutes of zenith

distances, and its position on the axis is never changed. If a collimating eye-piece is attached to the telescope, its zenith-distance micrometer set at 35 revolutions, and the instrument turned until the central micrometer-wires coincide with their own images reflected from the surface of mercury, the reading of the horizontal microscope of circle A will be 179° 56′, and some divisions of circle B will be found very nearly under the zeros of its micrometer microscopes.

Let

R denote the reading of the horizontal microscope of circle A when the telescope points to the zenith;

φ, the latitude of the Transit Circle;

δ, the declination of the object;

r, the refraction of the object;

Then, when the clamp is west, the telescope must be set so that the reading of the horizontal microscope of circle A will be,

For a direct observation.....	$R - \varphi + \delta \pm r$
For a reflection observation.....	$180^\circ + R + \varphi - \delta \mp r$

If the clamp is east, the reading will be,

For a direct observation.....	$R + \varphi - \delta \mp r$
For a reflection observation.....	$180^\circ + R - \varphi + \delta \pm r$

If the true value of φ were substituted in these expressions, whenever the computed setting was not exactly an even minute, it would be necessary to set on the *nearest* even minute. In practice, it is found much more convenient to set on the *next less* even minute; and, in order to avoid measuring more than half the distance between two consecutive divisions on the circle with the zenith-distance micrometer a fictitious value of φ is used. The fictitious latitude is $\varphi + 1'$ for a direct observation with clamp east, and a reflection observation with clamp west; and $\varphi - 1'$ for a direct observation with clamp west, and a reflection observation with clamp east. The formulæ actually employed for computing the settings are, therefore,

For a direct observation, clamp east.....	38°	$50'.6 - \delta \mp r$
For a reflection observation, clamp east.....	141°	$3'.4 + \delta \pm r$
For a direct observation, clamp west.....	321°	$3'.4 + \delta \pm r$
For a reflection observation, clamp west.....	218°	$50'.6 - \delta \mp r$

In these formulæ, r is taken with the upper sign for an object south, and with the lower sign for an object north, of the zenith. For the Moon, r is made equal to the sum of the refraction and parallax. In observing faint objects, it is often desirable to know the approximate reading of the zenith-distance micrometer for the point at which the object will enter the field of view. In both positions of the clamp the reading is computed from the formula,

$$\text{Micrometer reading} = 39 \text{ revolutions} - \frac{\varepsilon}{R}$$

where ε is the difference between the computed setting and the next less even minute, and R is the value of one revolution of the micrometer-screw.

The adopted mode of observing is to move the zenith-distance micrometer until the image of the star or of the limb of the Sun, Moon, or planet bisects the space between the two middle threads of the micrometer, and this operation is called, in this introduction, briefly, *bisecting* the object. Very faint objects are bisected with the threads A or B. These threads are also used, in order to avoid moving any thread more than two minutes, when observing two or more objects, differing more than two minutes in declination on the same setting. Bisections are made always by moving the micrometer-threads *from* the head. The microscope-micrometer threads are always moved *toward* the head. The readings of the zenith-distance micrometer are taken from the self-registering indexes after the completion of each observation.

Three persons are usually employed in making a complete observation of the four limbs of the Sun, though it is sometimes accomplished by two. The setting for the north and south limbs is computed, a paste-board cap with a circular aperture 3 inches in diameter is put over the object-glass, a shade-glass is placed on the eye-piece, and the telescope set for the position of the Sun's center. About two minutes before the predicted time of transit of the Sun's center, the shutters are opened, and the observer notes the time of transit of the preceding limb over the eleven transit threads in the usual way. The assistant at circle A now sets the telescope for the observation of one of the horizontal limbs, and while the observer is making the bisections at threads I and II, the assistant at circle B reads the four microscopes. This done, the telescope is set for the other limb, the bisections at threads VI and VII are made, and the assistant at circle B again reads the four microscopes The telescope is then unclamped and moved until the following limb is in the field, when its transit over all the threads is observed. During the observation, the circles are protected from the direct rays of the sun by the steps and platform used in observing the nadir point.

In observations of the Moon, if the preceding limb is the full one, the settings for the center and for the full horizontal limb are computed and the instrument set for the center, but not clamped. The transit of the preceding limb is then observed, and the observer going to circle A sets the instrument on the full horizontal limb. Returning to the eye-piece, he makes the bisections usually at threads II, III, IV, V, and VI. The observation is completed by reading the microscopes of circle B.

If the following limb is full, the telescope is set for the position of the full horizontal limb, and the microscopes are read before the Moon enters the field. After the bisections are made, the telescope is unclamped and moved till the following limb is in the field, when the transit is observed in the same way as for the preceding limb.

When the larger planets are observed, the bisections of one limb are made at threads I and VII, and of the other at II and VI. The transit of the preceding limb is usually observed at sets B and D, and of the following limb at set C.

Planets which do not present a well-defined disk are observed in the same manner as fixed stars.

The general plan for observing fixed stars is as follows:

(1) If the star is within 5° of the pole, the transit is observed by eye and ear at the threads of set C, and it is bisected at C_1, C_3, and C_5, or sometimes at all the threads of the set.

(2) If the star is situated between 5° and 20° of polar distance, the transits over set C are recorded on the chronograph in the usual way, and it is bisected at any two of the threads B_1, B_3, D_1, D_3; preference being given to the combination B_3, D_1, or B_1, D_3, which make the observation symmetrical.

(3) If the polar distance of the star exceeds 20°, its transit over the eleven threads is recorded on the chronograph, and the bisections are made at any two of the threads I, II, VI, VII; preference being given to the combinations II, VI, or I, VII. Sometimes bisections are made at each of the threads I, II, VI, VII.

(4) In the case of double stars, the transit of one component is usually observed over sets B and D, and of the other over set C. The bisection of one component is made at threads I and VII, and of the other at threads II and VI.

In observing transits by eye and ear, the beat of the chronograph-pen is used and not that of the counting-clock.

Thread intervals.—The following thread intervals were determined early in 1877, and have been employed during the year 1882:

TABLE II.

s.	s.	s.
B_1+12.255	C_1+4.095	
B_2+ 9.642	C_2+2.051	
B_3+ 8.174	C_3—0.011	D_1— 8.166
	C_4—2.035	D_2— 9.681
	C_5—4.078	D_3—12.230

In reading all complete observations from the chronograph sheets the records for C_1 and C_5 are omitted, and the remaining nine threads are considered the standard set.

The zenith-distance micrometer-screw.—From a series of observations made in 1873, the value of one revolution of the zenith-distance micrometer-screw was found to be 15″.312, and this value has been used in reducing the observations made in 1882.

When the close pair of micrometer-threads occupies the center of the space between the fixed horizontal threads, the reading of the micrometer-screw is 40 revolutions, and the reading increases as the threads move from the micrometer-head.

The right-ascension micrometer-screw.—The adopted value of one revolution of this screw is 1ˢ.024. This value was determined by measuring the intervals between the transit threads, which had been determined by the transits of stars near the pole.

Inclination of threads.—The corrections for inclination of micrometer-threads used in 1882 are given in the following table:

TABLE III.—*Inclination of Threads.*

Vertical Threads.	Correction for Central Threads.	Correction for Thread A.	Correction for Thread B.	Correction for Thread *b*.
	″	′ ″	′ ″	′ ″
I	− 0.29	− 2 31.49	+ 2 33.99	+ 2 53.49
II	0.19	31.53	33.92	53.71
III	− 0.09	31.58	33.84	53.94
IV	0.00	31.62	33.77	54.16
V	+ 0.09	31.66	33.70	54.38
VI	0.19	31.71	33.62	54.61
VII	+ 0.29	− 2 31.75	+ 2 33.55	+ 2 54.83

The corrections for threads A, B, and *b* in the above table contain, besides the correction for inclination, the reduction to the middle pair of threads.

Collimation constant.—The collimation constant is determined by means of the collimators, without reversing the instrument.

The covers of the opening through the central cube of the telescope are removed, and the instrument turned until the horizontal thread in collimator A appears in the field at about 35 revolutions. Then by means of the screws acting against the Y's of collimator A, its vertical thread is moved until it is seen very near the image of C_3 in the telescope. Three measures of the small distance between C_3 and the image of the vertical thread in the collimator are then made with the right-ascention micrometer.

The telescope is then pointed to the zenith, and the micrometer of collimator B is moved until the intersection of its cross-threads is exactly on the image of the vertical thread of collimator A. The telescope is then pointed on collimator B, and four measures made of the distance between C_3 and the intersection of the cross-threads.

The telescope is again pointed to the zenith, and the adjustment of the vertical thread of collimator A on the cross-threads of collimator B is examined. If it is imperfect, it is readjusted, and another set of measures similar to the first is made. The mean of the first and last sets of measures is taken as the true distance of C_3 from the image of the vertical thread of collimator A. Care is taken to determine the value of c_0 when the temperature is changing very slowly.

In the computation of the constant from these data in 1882,

c_τ = the sum of the collimation constant, at the temperature $\tau°$ Fahr., and the constant of diurnal aberration;

c_0 = the sum of the same constants at the temperature 0° Fahr.;

M = the distance, in micrometer revolutions, of the image of the vertical thread of collimator A *east* of C_3;

M′ = the distance, in micrometer revolutions, of the image of the intersection of the threads in collimator B *east* of C_3;

R = the value, in seconds of time, of one revolution of the micrometer-screw = $1^s.024$;

$\varphi =$ the latitude of the Observatory;

$i =$ the reduction of the position of C_3 to the mean of the set of nine threads $= -0^s.011$ during the year 1882.

Then, if M and M′ have been observed at the temperature τ° Fahr.

$$c_\tau = \tfrac{1}{2}(M + M')\,R - 0^s.021 \cos\varphi - i = 0^s.512\,(M + M') - 0^s.016 - i$$

In the Transit Circle the collimation varies with the temperature, and from a discussion of many observations, made at widely different temperatures, it has been found that

$$c_0 = c_\tau \mp 0^s.004\,\tau$$

where the upper sign is used when the clamp is East, and the lower when it is West.

As the value of c_0 has been found generally to be very steady throughout the year, it is usually determined two or three times a month, and for the final reduction of observations with the Transit Circle, a constant value of c_0 is used during the period that the thread C_3 remains undisturbed. The value used is the mean of all the values determined by observation. The adopted value of c_0 for 1882 will be found at the head of Table A of this Introduction.

From an examination of a large number of observations it was found, as suspected, that the change of error of collimation was not as rapid as the change of temperature, and in 1882 whenever the change of temperature was not excessive during the observing period the *mean* temperature of the period was used in computing the value of c, used in the reductions and assumed to be constant for the period. If the change of temperature was abnormal, the mean temperatures at the beginning and at the end of the period were used in computing two values of c, and in the reductions the values of c were assumed to vary uniformly with the time. The temperatures used were the readings of the thermometer attached to the barometer and of the thermometer hanging on the nadir stage at the same height as the objective when the telescope pointed to the zenith. For each period the value of c was obtained from the formula:

$$c = c_0 \pm 0^s.004\,\tau$$

where τ is the mean temperature for the period.

The level constant.—In 1882 the level constant, b, was deduced from the following observation:

Employing the eye-piece and apparatus used in making the nadir observation, the distance between c_3, the middle thread of set C, and its reflected image, was measured with the right-ascension micrometer.

Representing the measured distance by d, and the collimation constant by c, we have

$$b = c \pm \frac{d}{2}$$

the upper sign being used when the reflected image is West and the lower sign when it is East of the thread.

A very careful examination of the pivots with a spherometer caliper in January, 1878, indicates that they are sensibly round and equal in diameter.

The azimuth constant.—The azimuth constant is generally determined from the observed transit of one or more of the "azimuth stars"—Polaris, δ Ursæ Minoris, 51 Cephei, or λ Ursæ Minoris—by means of the formula

$$a = \frac{\alpha - (T + \Delta T + Bb + Cc)}{A}$$

where a, b, and c are the azimuth, level, and collimation constants; A, B, and C the azimuth, level, and collimation factors; α, the adopted right ascension of the star; T, its observed time of transit; and ΔT, the approximate clock correction at T. When the same star is observed, both above and below the pole, on the same observing day, the mean of the constants derived from those observations is adopted for the azimuth constant for that observing day.

If no star is observed above and below the pole, the adopted constant is the mean of the results obtained from such azimuth stars as have been observed.

If from any cause no azimuth stars are observed, the constant is derived from the observed places of all the known stars by the method of least squares.

The zenith point correction from nadir observations.—This constant is determined from observations of the nadir point with a Bohnenberger eye-piece in the following manner:

(1) The telescope is pointed downward over a box of mercury, set so that the circle reading is 179° 56′, and the four microscopes at circle B are read.

(2) Two readings of the zenith-distance micrometer are then taken by moving the close pair of micrometer threads until the space between them and their images, reflected from the mercury, appears equal to the distance between the two threads, the threads being nearer the head of the micrometer.

(3) Four readings of the micrometer are next made in the same way as before, except that the threads are placed the other side of the images.

(4) Two more readings of the micrometer are then made in the same manner as the first two, and the microscopes at circle B are again read.

The mean of the eight micrometer readings will give the reading for the coincidence of the two threads and their images.

The observations are reduced by means of the formula:

$$\text{Zenith point correction} = \left\{ \begin{array}{l} 180^\circ + \text{Division correction for circle B} \\ \quad + \text{Correction for flexure of circle B} \\ \quad + \text{Correction for flexure of telescope} \\ \quad - \text{Constant added to reduction to meridian} \end{array} \right\}$$

$$- \left\{ \begin{array}{l} 179^\circ\, 56 \pm 10 \text{ revolutions of micrometer microscopes.} \\ \quad \mp \text{Observed reading of micrometer microscopes.} \\ \quad + \text{Micrometer equivalent corresponding to the observed reading of the zenith distance micrometer} + 0^{r}.250. \end{array} \right\}$$

The values of the division and flexure corrections are found by means of the formulæ for reflection observations in Tables IV to VII. The constant added to the reduction to the meridian is 1″.80. In the terms relating to the micrometer microscopes, the upper signs are to be taken when the clamp is east and the lower when it is west.

The value of the first term in the expression for the zenith-point correction is a constant, and, in 1882, the different terms were obtained as follows:

In 1882 the clamp was west; circle B was used; the reading of the horizontal microscope, when the telescope was pointed to the zenith, was $49^\circ.1 = R_0$, and the distance of the nadir point from the reflected pole was $51^\circ.1 = \Delta$. With these data, Table V gives 49°.1 as the argument with which to enter Table IV to find the division correction — 0″.06. With the same data, Table VI gives the correction for circle flexure + 0.07; and Table VII gives the correction for flexure of telescope + 0″.29 Hence, the

	°	′	″
Nadir constant is	180	0	0.00
Correction for errors of division is		—	0.06
Correction for flexure of circle is		+	0.07
Correction for flexure of telescope is		+	0.29
Constant added to reduction to meridian is		—	1.80
	179	59	58.50

The second term is simply the concluded circle reading.

The correction $+0^r.250$ to the reading of the zenith-distance micrometer is necessary, because the head of that micrometer has four indexes, and the one used in the nadir observation reads $0^r.250$ less than that employed in other observations.

The adopted zenith-point corrections used in the reductions in 1882 will be found in Table C of this Introduction. These corrections were obtained, as in 1876, 1877, 1878, 1879, 1880, and 1881, by combining the results from nadir and reflection observations. The nadir observations were made in the usual way, and the divisions of circle B, on which the readings were actually made, were:

	°	′
For microscope V	184	4
For microscope VI	274	4
For microscope VII	4	4
For microscope VIII	94	4

The microscopes were read both *before* and *after* the nadir observation, and the mean of these readings was adopted as the true reading.

During the year 1882 *sixty-four* observations, *direct* and *reflected* at the same transit, were made of stars *south* of the zenith and *seventy-six north* of the zenith. The mean of the differences between the zenith-point corrections derived from observations of the nadir and of stars was, for *southern* stars, Nadir — Star = — 1″.23, and, for *northern* stars, Nadir — Star = — 0″.50. An examination of these individual values in groups comprising stars between 5° and 15°, 15° and 25°, 25° and 35°, and 35° and 45° Z. D. does not indicate any change in the correction, Nadir — Star depending on the zenith-distance.

Whenever nadir observations alone were made, the unmodified results were used as the zenith-point corrections. When corrections were obtained from both nadir and star observations, or from star observations alone, the values from stars were corrected by the above values of Nadir — Star, and the mean of all corrections obtained during a day or evening was adopted, giving equal weight to each value.

RESULTS OF OBSERVATIONS WITH THE TRANSIT CIRCLE.

In former volumes, from 1866 to 1876, inclusive, it was the custom to print the observations with the Transit Circle in detail, but in the volumes since 1876 it has been deemed advisable, for many reasons, to change the system and to print only the *results* of the observations and reductions, and this plan has been followed in 1882.

These results will be found on pages 1 to 92.

RIGHT ASCENSIONS.

The *first* column contains the day of the observation, which begins with the transit of the sun. It also contains the initial of the observer, as follows:

E.—Professor J. R. EASTMAN, U. S. N.
S.—Assistant Astronomer A. N. SKINNER.
R.—Assistant Astronomer MILES ROCK.
W.—Assistant Astronomer W. C. WINLOCK.

The *second* column contains the reference number.

The *third* column contains the name of the object. In the case of the Sun, Moon, and Planets, the part observed is always specified; I and II indicating respectively the preceding and following limbs; N. and S., the north and south limbs; and C., the center. When only one component of a double star is observed, it is always the brighter of the two, unless otherwise designated.

The *fourth* column contains the observed magnitude.

The *fifth* column contains the number of threads over which transits were observed and used in the reductions.

The *sixth* column contains the minutes and seconds of the clock time of transit over the "mean thread," whose position is the mean of the standard set of nine threads. When stars are observed over other or less threads than the standard set, the recorded transit over each thread is reduced to the "mean thread" by means of the known thread intervals. In the case of other objects, the reduction of each thread is corrected for the motion of the object during the interval between each thread and the "mean thread."

The *seventh* column contains the sum of the instrumental corrections, or the quantity

$$(Aa + Bb + Cc)$$

where a, b, c are the constants, and A, B, C are the factors for azimuth, level, and collimation.

The formulæ for computing A, B, and C are:

$$A = \sin(\varphi - \delta)\sec\delta = \sin\varphi - \cos\varphi\tan\delta$$
$$B = \cos(\varphi - \delta)\sec\delta = \cos\varphi + \sin\varphi\tan\delta$$
$$C = \sec\delta$$

in which φ is the latitude of the Observatory, and δ is the declination of the object observed.

The reductions of transit observations with the Transit Circle are made by means of tables giving the values of A*a*, B*b*, and C*c* for each degree of zenith distance, and for each $0^s.01$ of the constants *a*, *b*, *c*, from $0^s.01$ to $0^s.50$. These tables may be found in Appendix I to the Washington Observations for 1872.

A general table of the values of the factors A, B, and C may be found on page XLVII of the Introduction to the Transit Circle in 1873.

Table A, following this introduction, contains the adopted values of the instrumental constants for all occasions on which observations were made. The first column gives the mean date. The second, third, and fourth columns contain respectively the adopted values of the collimation, level, and azimuth constants. The values of *c* and *b* are taken as constant during each observing period. The value of *a* is generally assumed to be constant for each observing day. In rare instances, where a decided change is shown, different values are used for the day and night.

The *eighth* column contains the *apparent* and the *adopted* clock corrections. The apparent clock corrections are in full-faced type, and are derived, with rare exceptions, from direct observations of stars of the American Ephemeris within 40° of the equator.

The adopted apparent right ascensions of these stars are those of the American Ephemeris for 1882.

The clock corrections in the *eighth* column, printed in ordinary type, are derived from the data in Table B.

The principal work of the Transit Circle in 1882 has been upon the Sun, Moon, and Planets and miscellaneous stars, and it has been deemed unadvisable to attempt the determination of corrections in right ascension to the star-places of the American Ephemeris, as was done before 1876. Accordingly, in 1882, only the transits of such stars of the American Ephemeris were observed as were required to determine clock corrections and rates and instrumental corrections. Whenever possible, at least three stars were observed for clock corrections near the beginning and also near the end of the observing period on each day and each night. The mean of the corrections in each group was assumed to correspond with the mean of the times, and the hourly rate was determined for the period that the clock was in actual use. The corrections and rates are found in Table B, which requires no explanation. By this method the personal equation of the observer was not involved in 1882.

The *twelfth* column contains the apparent right ascension of each object, or the sum of the *sixth*, *seventh* and *eighth* columns, and in all cases has reference to that part of the object which was actually observed.

The *thirteenth* column contains,

(1) The reduction for all miscellaneous stars to their mean position for the fictitious epoch 1882.0. This reduction is computed with the constants of the American Ephemeris, and no proper motion is applied.

(2) The observed sidereal time of the semi-diameter of the Sun, the Moon, or a planet passing the meridian. When only one limb is observed, the quantity is that given in the American Ephemeris. In the case of the Sun, the Ephemeris time has

been corrected for the personal equation of the observer, which was determined from all the observations of the year.

NORTH POLAR DISTANCE.

The *ninth* column contains the zenith-distance *south* of each object observed, as derived from circles A and B. This quantity, when the clamp is *east*, is equal to the reading of the horizontal microscope of circle A, minus the excess of the mean of the readings of the micrometer microscopes of circle B above *ten* revolutions. When the clamp is *west*, it is equal to $359^\circ\ 52'$, minus the reading of the horizontal microscope of circle A, plus the excess of the mean of the readings of the micrometer microscopes of circle B above *ten* revolutions.

The *tenth* column contains the sum of the following quantities:

(1) The micrometer equivalent.

(2) The reduction to the meridian.

(3) The correction for inclination of threads and motion of object.

(4) The correction for the thread employed in the bisections.

(5) The zenith-point correction.

(1) The micrometer equivalent of the readings of the zenith-distance micrometer if the clamp is east, is

$$2'\ 0''.0 + \mathrm{R}\,(40^{\mathrm{r}}.000 - r)$$

if the clamp is west, it is

$$4'\ 0''.0 - \mathrm{R}\,(40^{\mathrm{r}}.000 - r)$$

In these formulæ r is the mean of the readings of the zenith-distance micrometer, expressed in revolutions; R, the mean value of one revolution between r and 40.0 revolutions, and the numerical term is a constant added to make the zenith-point correction always positive.

In practice, the micrometer equivalents are taken from a table where the values are tabulated for each $0^{\mathrm{r}}.01$ from $24^{\mathrm{r}}.3$ to $47^{\mathrm{r}}.8$.

Two bisections of each object observed were usually made with the declination micrometer. When, for any reason, any other number of bisections were made, the fact is noted at the foot of the page.

(2) The reduction to the meridian is computed from the formula

$$\begin{aligned}\mu &= 1''.80 - 112.5 \sin 1''\ i^2 \tan \delta \\ &= 1''.80 - [6.7367]\ i^2 \tan \delta\end{aligned}$$

where μ is the reduction to the meridian, in seconds of arc; i, the equatorial interval in seconds of time, between the mean thread and the thread at which the bisection was made; δ, the declination of the object; and $1''.80$ is a constant introduced to make μ generally positive. The values of μ are tabulated for all the vertical threads and for each degree of declination.

Where bisections are made away from the vertical threads, the time of the bisection is noted, and the correction is computed from the formula

$$\mu = 1''.80 - [6.4357]\ \mathrm{I}^2 \sin 2\,\delta$$

where I represents the distance of the object from the meridian at the time of bisection, and the other terms are the same as before.

(3) The corrections for inclination of threads given on pages XXVI and 3 were derived from a large number of observations at threads I and VII. The correction for motion of object in unsymmetrical observations is computed from the formula

$$\Delta' = \frac{\Delta}{3600} \mathrm{I}$$

where Δ' is the correction for motion, and Δ the hourly motion of the object in declination, both expressed in seconds of arc; I is the interval, in seconds of time, between the mean thread and the thread at which the bisection was made.

(4) In observations where threads A or B were employed, the correction for the distance of the thread from the central pair of threads was required, and the value of this correction is found on pages XXVI and 3.

(5) The zenith-point correction is taken directly from Table C, and it is also given for each date at the bottom of each page.

The sum of the quantities in columns *nine* and *ten* gives the *apparent zenith distance south.*

The *eleventh* column contains the correction for refraction computed from Bessel's formula, employing the tables given in the Appendix to the Washington Observations for 1845.

The *fourteenth* column contains the apparent north polar distance of each object, or the adopted co-latitude, $51^\circ\ 6'\ 21''.2 \pm$ the sum of the apparent zenith distance south and the refraction. The upper sign is employed for a direct, and the lower for a reflected, observation.

The *fifteenth* column contains:

(1) For stars whose apparent positions are given in the American Ephemeris, the correction to the north polar distance of the Ephemeris obtained from each observation.

(2) For others stars, the reduction to their mean position for the fictitious epoch 1882.0. This reduction is computed with the constants of the American Ephemeris, and no proper motion is applied.

(3) For the asteroids, the correction for parallax, computed from the data accompanying the ephemerides.

The corrections for parallax, semi-diameter, and defective illumination for the Sun, Moon, and larger planets are given at the foot of the pages containing the observations.

The readings of the barometer, the attached thermometer, and the external thermometer are given at the foot of each page.

All corrections for parallax, except those for the asteroids, are computed from the data contained in the American Ephemeris. When both limbs of an object were observed, the semi-diameter is derived from the observation; but when only one limb was observed, the semi-diameter is taken from the American Ephemeris.

The corrections for defective illumination are computed from the data of the American Ephemeris.

CORRECTIONS TO THE STAR-POSITIONS OF THE AMERICAN EPHEMERIS IN NORTH POLAR DISTANCE, GIVEN BY INDIVIDUAL OBSERVATIONS WITH THE TRANSIT CIRCLE IN 1882.

The tables containing these corrections may be found on pages 123 to 136, and give the date of the observation, the initial of the observer, and the correction for each observation in north polar distance, copied without change except for erroneous micrometer revolutions, from the last column of the pages of the observations.

A correction inclosed in a parenthesis signifies that it is rejected in the determination of the adopted mean result.

The mean polar distances thus found still require the following corrections:

(1) For errors of division;
(2) For flexure;
(3) For error in zenith-point correction;
(4) For error in assumed latitude.

Errors of division.—The corrections for errors of division of circle B were determined in November and December, 1865. These corrections are given in the following table,[1] which contains the correction to be applied to the mean of the readings of the four microscopes in order to free this mean from the effect of errors of division. The argument with which to enter the table is the reading of the horizontal microscope at circle B.

TABLE IV.—*Corrections for Errors of Division to be applied to the Mean of the Readings of the Four Micrometer Microscopes of Circle B.*

Arg.	Corrections.	Arg.	Corrections.	Arg.	Corrections.	Arg.	Corrections.	Arg.	Corrections.
°	″	°	″	°	″	°	″	°	″
0	+ 0.30	18	+ 0.57	36	+ 0.12	54	+ 0.14	72	+ 0.27
1	+ 0.23	19	+ 0.52	37	+ 0.15	55	+ 0.15	73	+ 0.28
2	+ 0.18	20	+ 0.48	38	+ 0.14	56	+ 0.16	74	+ 0.31
3	+ 0.18	21	+ 0.49	39	+ 0.08	57	+ 0.17	75	+ 0.35
4	+ 0.22	22	+ 0.52	40	+ 0.02	58	+ 0.19	76	+ 0.40
5	+ 0.27	23	+ 0.53	41	− 0.07	59	+ 0.20	77	+ 0.45
6	+ 0.27	24	+ 0.50	42	− 0.12	60	+ 0.22	78	+ 0.46
7	+ 0.26	25	+ 0.46	43	− 0.13	61	+ 0.26	79	+ 0.45
8	+ 0.26	26	+ 0.44	44	− 0.07	62	+ 0.28	80	+ 0.44
9	+ 0.27	27	+ 0.42	45	− 0.01	63	+ 0.27	81	+ 0.41
10	+ 0.29	28	+ 0.40	46	0.00	64	+ 0.25	82	+ 0.38
11	+ 0.29	29	+ 0.34	47	0.00	65	+ 0.22	83	+ 0.36
12	+ 0.29	30	+ 0.27	48	0.00	66	+ 0.22	84	+ 0.36
13	+ 0.36	31	+ 0.24	49	+ 0.06	67	+ 0.22	85	+ 0.36
14	+ 0.44	32	+ 0.22	50	+ 0.12	68	+ 0.22	86	+ 0.40
15	+ 0.52	33	+ 0.19	51	+ 0.12	69	+ 0.23	87	+ 0.44
16	+ 0.56	34	+ 0.15	52	+ 0.12	70	+ 0.24	88	+ 0.44
17	+ 0.57	35	+ 0.11	53	+ 0.13	71	+ 0.25	89	+ 0.37

[1] Washington Observations for 1865, Description of Transit Circle, § 72.

The corrections in this table are only applicable when the microscopes are 90° apart, and their supporting arms make an angle of 45° with the vertical.

The following table gives the argument, in all cases, with which to enter Table IV to obtain the division correction which must be applied to an observed north polar distance. In this table, R_0 is the reading of the horizontal microscope at circle B when the telescope points to the zenith; Δ is the observed north polar distance of the object, and the last column indicates the use of the sign of the correction in Table IV.

The argument will, of course, be brought into the first quadrant.

TABLE V.

Clamp.	Observation.	Argument.	Sign of Correction.
East	Direct	$R_0+51.1-\Delta$	Changed
	Reflected	$R_0+38.9+\Delta$	Same
West	Direct	$R_0+38.9+\Delta$	Same
	Reflected	$R_0+51.1-\Delta$	Changed

Flexure.—The correction to an observed circle reading for flexure of circle[1] is, for circle B, $+0''.84 \sin R - 0''.86 \cos R$, where R is the reading of the horizontal microscope when the telescope is pointed to the object. Changing the expression for the correction for flexure of circle, so that the correction will be a function of the north polar distance, we have the following table for circle B:

TABLE VI.

Clamp.	Observation.	Correction.
East	Direct	$-1''.20 \sin (R_0+5^\circ.4\ \Delta)$
	Reflected	$+1''.20 \sin (R_0+83^\circ.2+\Delta)$
West	Direct	$+1''.20 \sin (R_0+263^\circ.2+\Delta)$
	Reflected	$-1''.20 \sin (R_0+185^\circ.4-\Delta)$

where the quantities have the same significance as in Table V.

[1] Washington Observations, 1865, Description of Transit Circle, § 61.

From observations[1] made in 1872 and 1873, the following formulæ were obtained for determining the correction to be applied to an observed north polar distance for the effect of flexure of telescope and curvature of level for circle B:

TABLE VII.

Clamp.	Observation.	Correction.
		″ °
East	Direct	$-0.95 \sin(\Delta - 33.3)$
	Reflected	$+1.10 \sin(\Delta - 66.4)$
West	Direct	$-0.95 \sin(\Delta - 68.9)$
	Reflected	$+1.10 \sin(\Delta - 35.8)$

The correction for constant error in the zenith-point is obtained from a comparison of the direct and reflected observations in 1882. Observations were not used in this discussion except when the star was observed direct and reflected at the same transit.

The method of obtaining the value of this correction is shown in Table VIII, where the results of the observations are collected. In this table, the first column contains the names of all the stars observed by reflection in 1882. The second column contains the right ascension to the nearest tenth of an hour. The third column contains the mean values of the north polar distances as given by direct observations; and the fourth column contains the seconds of the mean values obtained from reflected observations. The small subscript figures indicate the number of observations made on each star. The fifth column contains the difference between the direct and reflected observations. The sixth column contains the corrections which must be applied to the quantities in the fifth column on account of the errors of graduation and flexure of telescope and circle. The seventh column contains the sums of the quantities in the fifth and sixth columns.

The eighth column contains the weights of the values of $2\ \Delta Z$ in the seventh column. As there are the same number of observations reflected as direct, the weight assigned is simply the square root of the number of observations.

The ninth column contains the products of the quantities in the seventh column by their respective weights, and the final results are:

From observations north of the zenith..... $\Delta Z = -0''.54$
From observations south of the zenith..... $\Delta Z = -1''.11$

[1] Introduction to Transit Circle, Washington Observations, 1872, page lxiv.

TABLE VIII.—*Computation of the Value of ΔZ from Observations in* 1882.

NORTHERN STARS.

Name of Star.	α	Observed N. P. Distance. Direct.	Observed N. P. Distance. Reflected.	D.– R.	Corr. to D.– R.	2ΔZ	p	2pΔZ
	h.	° ′ ″	″	″	″	″		″
Polaris	1.3	1 19 12.76	11.96$_1$	+ 0.80	+ 0.29	+ 1.09	1.00	+ 1.09
B. A. C. 4643	13.8	6 39 19.70	19.80$_1$	— 0.10	+ 0.16	+ 0.06	1.00	+ 0.06
1 Draconis	9.3	8 9 13.59	13.99$_1$	— 0.40	+ 0.15	— 0.25	1.00	— 0.25
ζ Ursæ Minoris	15.8	11 50 36.07	37.57$_1$	— 1.50	+ 0.44	— 1.06	1.00	— 1.06
κ Cephei	20.2	12 38 38.83	40.63$_1$	— 1.80	+ 0.46	— 1.34	1.00	— 1.34
9 Draconis	10.4	13 40 46.58	48.18$_3$	— 1.60	+ 0.45	— 1.15	1.73	— 1.99
β Ursæ Minoris	14.9	15 21 42.30	44.00$_1$	— 1.70	+ 0.50	— 1.20	1.00	— 1.20
Groombridge 4163 . .	23.8	16 14 44.89	47.05$_3$	— 2.16	+ 0.57	— 1.59	1.73	— 2.75
β Cephei	21.5	19 57 23.75	24.75$_1$	— 1.00	+ 0.78	— 0.22	1.00	— 0.22
λ Draconis	11.4	20 1 2.77	4.17$_1$	— 1.40	+ 0.78	— 0.62	1.00	— 0.62
ε Draconis	19.8	20 1 55.79	56.49$_1$	— 0.70	+ 0.78	+ 0.08	1.00	+ 0.08
Groombridge 2320 . .	16.1	21 52 42.97	44.57$_1$	— 1.60	+ 0.73	— 0.87	1.00	— 0.87
α Camelopardalis . . .	4.7	23 51 35.81	36.41$_1$	— 0.60	+ 0.73	+ 0.13	1.00	+ 0.13
32 Ursæ Majoris	10.2	24 18 12.49	14.00$_6$	— 1.51	+ 0.71	— 0.80	2.45	— 1.96
α Ursæ Majoris	10.9	27 36 42.48	43.85$_6$	— 1.37	+ 0.56	— 0.81	2.45	— 1.98
B. A. C. 126	0.4	27 43 9.40	11.30$_1$	— 1.90	+ 0.56	— 1.34	1.00	— 1.34
α Cephei	21.3	27 54 47.69	50.69$_1$	— 3.00	+ 0.54	— 2.46	1.00	— 2.46
B. A. C. 2819	8.3	28 53 19.50	20.65$_2$	— 1.15	+ 0.51	— 0.64	1.41	— 0.90
B. A. C. 5348	16.0	31 7 6.70	8.80$_3$	— 2.10	+ 0.41	— 1.69	1.41	— 2.38
B. A. C. 6289	18.4	31 16 1.20	1.30$_1$	— 0.10	+ 0.40	+ 0.30	1.00	+ 0.30
D. M. + 57°, 2013 . .	19.5	32 16 46.10	48.20$_1$	— 2.10	+ 0.34	— 1.76	1.00	— 1.76
α Cassiopeæ	0.6	34 6 34.36	34.81$_2$	— 0.45	+ 0.31	— 0.14	1.41	— 0.20
γ Ursæ Majoris	11.8	35 38 55.33	57.33$_1$	— 2.00	+ 0.29	— 1.71	1.00	— 1.71
ϑ Bootis	14.4	37 36 10.65	12.05$_1$	— 1.40	+ 0.30	— 1.10	1.00	— 1.10
ϑ Ursæ Majoris	9.4	37 47 7.62	8.72$_1$	— 1.10	+ 0.30	— 0.80	1.00	— 0.80
γ Draconis	17.9	38 29 45.80	48.77$_3$	— 2.97	+ 0.31	— 2.66	1.73	— 4.60
B. A. C. 79	0.3	38 38 2.13	3.12$_6$	— 0.99	+ 0.32	— 0.67	2.45	— 1.64
η Ursæ Majoris	13.7	40 5 48.44	50.04$_3$	— 1.60	+ 0.28	— 1.32	1.73	— 2.28
α Persei	3.3	40 33 34.97	35.80$_4$	— 0.83	+ 0.25	— 0.58	2.00	— 1.16
ι Ursæ Majoris	8.9	41 29 44.71	46.07$_6$	— 1.36	+ 0.18	— 1.18	2.24	— 2.64
B. A. C. 3981	11.7	41 33 56.10	58.90$_1$	— 2.80	+ 0.17	— 2.63	1.00	— 2.63
B. A. C. 1287	4.1	41 53 15.00	16.40$_1$	— 1.40	+ 0.15	— 1.25	1.00	— 1.25
o Cassiopeæ	0.6	42 21 40.85	42.05$_2$	— 1.20	+ 0.10	— 1.10	1.41	— 1.55
c Persei	4.0	42 36 13.47	14.50$_3$	— 1.03	+ 0.09	— 0.94	1.73	— 1.63
31 Cygni	20.2	43 36 56.00	59.50$_1$	— 3.50	+ 0.01	— 3.49	1.00	— 3.49
φ Herculis	16.1	44 45 16.90	18.70$_1$	— 1.80	— 0.03	— 1.83	1.00	— 1.83
α Cygni	20.6	45 8 24.84	25.76$_6$	— 0.92	— 0.02	— 0.94	2.45	— 2.30
δ Cygni	19.7	45 9 21.20	23.90$_1$	— 2.70	— 0.02	— 2.72	1.00	— 2.72
								ΔZ = –0″.54

TABLE VIII.—*Computation of the Value of ΔZ*—Continued.

SOUTHERN STARS.

Name of Star.	a	Observed N. P. Distance. Direct.	Observed N. P. Distance. Reflected.	D.—R.	Corr. to D.—R.	2ΔZ	p	2pΔZ
	h.	° ′ ″	″	″	″	″		″
ε Cygni	20.7	56 28 13.30	15.20$_1$	— 1.90	+ 0.09	— 1.81	1.00	— 1.81
a^2 Geminorum	7.5	57 51 12.13	15.08$_3$	— 2.95	+ 0.09	— 2.86	1.41	— 4.03
B. A. C. 7029	20.3	58 11 22.53	24.60$_3$	— 2.07	+ 0.10	— 1.97	1.73	— 3.41
B. A. C. 166	0.6	59 47 3.82	5.80$_4$	— 1.98	+ 0.24	— 1.74	2.00	— 3.48
B. A. C. 7923	22.6	60 23 42.00	44.20$_1$	— 2.20	+ 0.29	— 1.91	1.00	— 1.91
β Coronæ Borealis	15.4	60 29 10.90	13.40$_3$	— 2.50	+ 0.30	— 2.20	1.41	— 3.10
B. A. C. 4195	12.4	61 4 30.30	32.40$_1$	— 2.10	+ 0.35	— 1.75	1.00	— 1.75
B. A. C. 6150	18.0	61 15 7.60	10.25$_3$	— 2.65	+ 0.37	— 2.28	1.41	— 3.21
β Tauri	5.3	61 29 37.06	37.56$_1$	— 0.50	+ 0.38	— 0.12	1.00	— 0.12
B. A. C. 6690	19.4	62 17 11.65	13.95$_3$	— 2.30	+ 0.45	— 1.85	1.41	— 2.61
B. A. C. 7256	20.8	62 23 23.00	26.17$_3$	— 3.17	+ 0.45	— 2.72	1.73	— 4.71
ε Bootis	14.7	62 25 37.40	39.85$_4$	— 2.45	+ 0.45	— 2.00	2.00	— 4.00
ε Coronæ Borealis	15.9	62 46 44.78	47.58$_1$	— 2.80	+ 0.50	— 2.30	1.00	— 2.30
α Coronæ Borealis	15.5	62 53 12.94	15.44$_4$	— 2.50	+ 0.50	— 2.00	2.00	— 4.00
d Bootis	14.1	64 20 52.82	55.68$_4$	— 2.86	+ 0.50	— 2.36	2.00	— 4.72
16 Pegasi	21 8	64 37 44.40	46.90$_1$	— 2.50	+ 0.49	— 2.01	1.00	— 2.01
ε Geminorum	6.6	64 45 11.50	13.55$_3$	— 2.05	+ 0.49	— 1.56	1.41	— 2.20
ε Leonis	9.7	65 40 56.67	60.17$_1$	— 3.50	+ 0.50	— 3.00	1.00	— 3.00
41 Leonis Minoris	10.6	66 11 36.90	40.70$_1$	— 3.80	+ 0.50	— 3.30	1.00	— 3.30
δ Geminorum	7.2	67 48 4.20	5.50$_1$	— 1.30	+ 0.55	— 0.75	1.00	— 0.75
γ Cancri	8.6	68 6 28.15	30.30$_3$	— 2.15	+ 0.56	— 1.59	1.41	— 2.24
B. A. C. 6438	18.8	68 42 56.50	60.10$_1$	— 3.60	+ 0.59	— 3.01	1.00	— 3.01
η Cancri	8.4	69 9 30.71	32.91$_1$	— 2.20	+ 0.60	— 1.60	1.00	— 1.60
B. A. C. 2305	7.0	69 15 28.60	28.40$_1$	+ 0.20	+ 0.60	+ 0.80	1.00	+ 0.80
α Bootis	14.2	70 12 7.37	10.87$_1$	— 3.50	+ 0.63	— 2.87	1.00	— 2.87
ζ^1 Cancri	8.1	71 59 48.80	53.50$_1$	— 4.70	+ 0.79	— 3.91	1.00	— 3.91
B. A. C. 3453	10.0	72 39 42.43	46.83$_3$	— 4.40	+ 0.82	— 3.58	1.73	— 6.19
α Tauri	4.5	73 43 41.44	47.14$_1$	— 5.70	+ 0.86	— 4.84	1.00	— 4.84
β Leonis	11.7	74 46 5.55	6.25$_3$	— 0.70	+ 0.90	+ 0.20	1.41	+ 0.28
α Leonis	10.0	77 27 20.89	24.59$_1$	— 3.70	+ 1.08	— 2.62	1.00	— 2.62
o Leonis	9.6	79 34 15.40	19.70$_1$	— 4.30	+ 1.16	— 3.14	1.00	— 3.14
ρ Leonis	10.4	80 5 9.13	13.33$_1$	— 4.20	+ 1.15	— 3.05	1.00	— 3.05
κ Ophiuchi	16.9	80 26 23.38	26.58$_1$	— 3.20	+ 1.16	— 2.04	1.00	— 2.04
β Cancri	8.2	80 27 4.70	8.40$_1$	— 3.70	+ 1.16	— 2.54	1.00	— 2.54
ε Pegasi	21.6	80 39 52.78	57.83$_3$	— 5.05	+ 1.16	— 3.89	1.41	— 5.48
B. A. C. 3415	9.9	81 23 23.10	27.10$_1$	— 4.00	+ 1.19	— 2.81	1.00	— 2.81

TABLE VIII.—*Computation of the Value of ΔZ*—Continued.

SOUTHERN STARS—Continued.

Name of Star.	a	Observed N. P. Distance.		D.—R.	Corr. to D.—R.	$2\Delta Z$	p	$2p\Delta Z$
		Direct.	Reflected.					
	h.	° ′ ″	″	″	″	″		″
B. A. C. 2462	7.3	81 28 24.30	27.20_3	— 2.90	+ 1.19	— 1.71	1.41	— 2.41
ω Piscium	23.9	83 47 21.27	25.52_3	— 4.25	+ 1.19	— 3.06	1.41	— 4.31
B. A. C. 5893*	17.3	85 45 18.60	20.60_1	— 2.00	+ 1.09	— 0.91	1.00	— 0.91
Weisse 1452	6.8	87 48 30.50	33.80_1	— 3.30	+ 0.99	— 2.31	1.00	— 2.31
υ Leonis	11.5	90 10 17.62	22.02_1	— 4.40	+ 1.01	— 3.39	1.00	— 3.39
β Orionis	5.1	98 20 19.24	21.24_1	— 2.00	+ 0.78	— 1.22	1.00	— 1.22
								$\Delta Z = -1''.11$

The correction for error of assumed latitude is derived from a comparison of the observations of the same stars, both above and below the pole. Table IX exhibits the method of obtaining the value of the correction $\Delta\varphi$. The *sixth* column contains the sum of the corrections for the errors of division, flexure, and assumed zenith point.

The *eighth* column contains the weights of the values of $2\ \Delta\varphi$ in the *seventh* column. The weights are computed by the formula

$$p = \frac{12\ m\ n}{2\ m\ n + 11\ (m + n)}$$

where p is the weight, m the number of observations above the pole, and n the number of observations below the pole.

The other columns will require no explanation.

From this table, it is found that $\Delta\varphi = -0''.56$.

TABLE IX.—*Computation of the value of $\Delta\varphi$ from Observations in* 1882.

Name of Star.	a	Observed N. P. Distance. Culmination. Upper.	Observed N. P. Distance. Culmination. Lower.	U. + L. −360°.	Corr. to U. + L. −360°.	$2\Delta\varphi$	ϕ	$2\phi\Delta\varphi$
	h.	° ′ ″	″	″	″	″		″
λ Ursæ Minoris	19.7	1 3 4.61$_{10}$	52.91$_{16}$	− 2.48	+ 1.88	− 0.60	3.17	− 1.90
Polaris	1.3	1 19 10.92$_{42}$	44.80$_{32}$	− 4.28	+ 1.85	− 2.43	4.61	− 11.20
51 Cephei	6.7	2 46 20.87$_{14}$	36.70$_{14}$	− 2.43	+ 1.67	− 0.76	3.36	− 2.55
δ Ursæ Minoris	18.2	3 23 23.80$_{10}$	34.44$_{13}$	− 1.76	+ 1.63	− 0.13	3.04	− 0.40
32¹ Camelopardalis . . .	12.8	5 56 24.25$_{2}$	32.70$_{1}$	− 3.05	+ 1.67	− 1.38	0.65	− 0.90
32² Camelopardalis . . .	12.8	5 56 42.57$_{2}$	15.23$_{2}$	− 2.20	+ 1.67	− 0.53	0.92	− 0.49
ε Ursæ Minoris	17.0	7 46 13.16$_{1}$	44.84$_{1}$	− 2.00	+ 1.76	− 0.24	0.50	− 0.12
Carrington 1547 . . .	10.3	7 47 17.20$_{3}$	38.10$_{3}$	− 4.70	+ 1.76	− 2.94	1.08	− 3.18
D. M. + 80°, 281 . .	8.8	9 12 55.40$_{3}$	0.87$_{3}$	− 3.73	+ 1.78	− 1.95	1.08	− 2.11
12-Year Cat. 1879 . .	20 9	9 53 25.80$_{1}$	31.50$_{6}$	− 2.70	+ 1.79	− 0.91	0.80	− 0.73
ζ Ursæ Minoris	15.8	11 50 33.85$_{6}$	23.63$_{1}$	− 2.52	+ 1.77	− 0.75	0.80	− 0.60
Groombridge 1361 . .	7.7	12 7 15.30$_{3}$	41.70$_{1}$	− 3.00	+ 1.75	− 1.25	0.72	− 0.90
κ Cephei	20.2	12 38 39.18$_{2}$	19.24$_{3}$	− 1.58	+ 1.72	+ 0.14	1.08	+ 0.15
48 Cephei	3.1	12 42 2.74$_{2}$	54.79$_{4}$	− 2.47	+ 1.71	− 0.76	1.17	− 0.89
γ Cephei	23.6	13 1 32.85$_{9}$	24.36$_{4}$	− 2.79	+ 1.70	− 1.09	2.01	− 2.20
9 Draconis	10.4	13 40 46.42$_{11}$	11.17$_{8}$	− 2.41	+ 1.68	− 0.73	2.74	− 2.00
5 Ursæ Minoris	14.5	13 46 44.86$_{1}$	11.24$_{1}$	− 3.90	+ 1.68	− 2.22	0.50	− 1.11
226 Cephei	22.5	14 22 52.75$_{3}$	4.95$_{4}$	− 2.30	+ 1.69	− 0.61	1.43	− 0.87
Groombridge 966 . .	5.4	15 2 14.00$_{1}$	43.10$_{2}$	− 2.90	+ 1.71	− 1.19	0.65	− 0.77
β Ursæ Minoris	14.9	15 21 42.36$_{11}$	14.59$_{7}$	− 3.05	+ 1.74	− 1.31	2.62	− 3.43
Groombridge 4163 . .	23.8	16 14 44.78$_{9}$	13.63	− 1.59	+ 1.80	+ 0.21	1.37	+ 0.29
D. M. + 72°, 325 . .	6.4	17 24 34.30$_{3}$	24.07$_{2}$	− 1.63	+ 1.86	+ 0.23	1.28	+ 0.29
γ² Ursæ Minoris	15.3	17 44 44.58$_{2}$	13.60$_{2}$	− 1.82	+ 1.86	+ 0.04	1.08	+ 0.04
Groombridge 3241 . .	20.5	17 52 3.78$_{2}$	51.37$_{1}$	− 4.85	+ 1.85	− 3.00	0.65	− 1.95
11 Cephei	21.7	19 13 52.13$_{1}$	3.87	− 4.00	+ 1.87	− 2.13	0.50	− 1.06
κ Draconis	12.5	19 33 37.72$_{1}$	17.58$_{1}$	− 4.70	+ 1.86	− 2.84	0.50	− 1.42
d Ursæ Majoris	9.4	19 39 7.01$_{1}$	51.89$_{1}$	− 1.10	+ 1.86	+ 0.76	0.50	+ 0.38
β Cephei	21.5	19 57 24.07$_{5}$	33.69$_{5}$	− 2.24	+ 1.86	− 0.38	1.88	− 0.71
A Draconis	16.5	20 58 33.24$_{2}$	22.91$_{1}$	− 3.85	+ 1.81	− 2.04	0.65	− 1.33
3 Ursæ Majoris	8.0	21 10 48.24$_{2}$	8.31$_{2}$	− 3.45	+ 1.80	− 1.65	0.92	− 1.52
Piazzi VII, 67	7.3	21 17 42.95$_{2}$	12.15$_{1}$	− 4.90	+ 1.80	− 3.10	0.65	− 2.02
σ² Ursæ Majoris	9.0	22 23 14.58$_{2}$	43.02$_{1}$	− 2.40	+ 1.77	− 0.63	0.65	− 0.41
δ Draconis	19.2	22 32 43.77$_{10}$	13.83$_{1}$	− 2.40	+ 1.78	− 0.62	0.85	− 0 53
ι Cephei	22.8	24 25 10.90$_{11}$	45.86$_{2}$	− 3.24	+ 1.83	− 1.41	1.41	− 1.99
B. A. C. 6905	20.0	25 30 31.70$_{1}$	24.20$_{1}$	− 4.10	+ 1.86	− 2.24	0.50	− 1.12
α Cephei	21.3	27 54 49.47$_{5}$	5.71$_{2}$	− 4.82	+ 1.73	− 3.09	1.52	− 4.70
								$\Delta\varphi = -0''.56$

Collecting the results from all the available data, the total systematic correction to be applied to an observed north polar distance in 1882 is:

For objects *north* of the zenith:

Observed directly - - Corr. = Div. Corr. + 0″.47 sin (359°.9 + Δ) + 0″.54 + 0″.56
Observed by reflection Corr. = Div. Corr. + 0″.39 sin (59°.6 + Δ) − 0″.54 + 0″.56

For objects *south* of the zenith:

Observed directly - - Corr. = Div. Corr. + 0″.47 sin (359°.9 + Δ) + 1″.11 + 0″.56
Observed by reflection Corr. = Div. Corr. + 0″.39 sin (59°.6 + Δ) − 1″.11 + 0″.56

The numerical values of these expressions are given in Table X with the argument north polar distance. The *second* column contains the corrections for the errors in the division of circle B. The *third* column contains the sums of the corrections for flexure of circle B, flexure of telescope, effect of gravity on the zenith-distance micrometer, and, in the case of reflection observations, curvature of the surface of the mercury. The *fourth* column contains the sum of the corrections for errors in the assumed latitude and constant error in the zenith.

As the computed value of ΔZ is not the same for northern as for southern objects, to avoid an abrupt change at the zenith, the value is gradually changed between 46° and 56° north polar distance. The *fifth* column contains the sum of all the corrections.

TABLE X.—*Systematic Corrections to be applied to the North-Polar Distances of objects observed with the Transit Circle in* 1882.

DIRECT OBSERVATIONS.

N. P. D.	Division Correction.	Flexure Correction.	$\Delta Z+\Delta\varphi$	Total.	N. P. D.	Division Correction.	Flexure Correction.	$\Delta Z+\Delta\varphi$	Total.
°	″	″	″	″	°	″	″	″	″
0	+ 0.44	0.00	+ 1.10	+ 1.54	15	+ 0.36	+ 0.12	+ 1.10	+ 1.58
1	.37	+ 0.01	1.10	1.48	16	.44	.13	1.10	1.67
2	.30	.02	1.10	1.42	17	.52	.14	1.10	1.76
3	.23	.02	1.10	1.35	18	.56	.14	1.10	1.80
4	.18	.03	1.10	1.31	19	.57	.15	1.10	1.82
5	+ 0.18	+ 0.04	+ 1.10	+ 1.32	20	+ 0.57	+ 0.16	+ 1.10	+ 1.83
6	.22	.05	1.10	1.37	21	.52	.17	1.10	1.79
7	.27	.06	1.10	1.43	22	.48	.18	1.10	1.76
8	.27	.06	1.10	1.43	23	.49	.18	1.10	1.77
9	.26	.07	1.10	1.43	24	.52	.19	1.10	1.81
10	+ 0.26	− 0.08	+ 1.10	+ 1.44	25	+ 0.53	+ 0.20	+ 1.10	+ 1.83
11	.27	.09	1.10	1.46	26	.50	.21	1.10	1.81
12	.29	.10	1.10	1.49	27	.46	.21	1.10	1.77
13	.29	.10	1.10	1.49	28	.44	.22	1.10	1.76
14	.29	.11	1.10	1.50	29	.42	.23	1.10	1.75

TABLE X.—*Systematic Corrections, etc.*—Continued.

DIRECT OBSERVATIONS.

N. P. D.	Division Correction.	Flexure Correction.	$\Delta Z+\Delta\varphi$	Total.	N. P. D.	Division Correction.	Flexure Correction.	$\Delta Z+\Delta\varphi$	Total.
°	″	″	″	″	°	″	″	″	″
30	+ 0.40	+ 0.23	+ 1.10	+ 1.73	70	+ 0.22	+ 0.44	+ 1.67	+ 2.33
31	.34	.24	1.10	1.68	71	.23	.44	1.67	2.34
32	.27	.25	1.10	1.62	72	.24	.45	1.67	2.36
33	.24	.26	1.10	1.60	73	.25	.45	1.67	2.37
34	.22	.26	1.10	1.58	74	.27	.45	1.67	2.39
35	+ 0.19	+ 0.27	+ 1.10	+ 1.56	75	+ 0.28	+ 0.45	+ 1.67	+ 2.40
36	.15	.28	1.10	1.53	76	.31	.46	1.67	2.44
37	.11	.28	1.10	1.49	77	.35	.46	1.67	2.48
38	.12	.29	1.10	1.51	78	.40	.46	1.67	2.53
39	.15	.30	1.10	1.55	79	.45	.46	1.67	2.58
40	+ 0.14	+ 0.30	+ 1.10	+ 1.54	80	+ 0.46	+ 0.46	+ 1.67	+ 2.59
41	.08	.31	1.10	1.49	81	.45	.46	1.67	2.58
42	+ 0.02	.31	1.10	1.43	82	.44	.47	1.67	2.58
43	− 0.07	.32	1.10	1.35	83	.41	.47	1.67	2.55
44	.12	.33	1.10	1.31	84	.38	.47	1.67	2.52
45	− 0.13	+ 0.33	+ 1.10	+ 1.30	85	+ 0.36	+ 0.47	+ 1.67	+ 2.50
46	.07	.34	1.11	1.38	86	.36	.47	1.67	2.50
47	− 0.01	.34	1.13	1.46	87	.36	.47	1.67	2.50
48	.00	.35	1.17	1.52	88	.40	.47	1.67	2.54
49	.00	.35	1.22	1.57	89	.44	.47	1.67	2.58
50	0.00	+ 0.36	+ 1.29	+ 1.65	90	+ 0.44	+ 0.47	+ 1.67	+ 2.58
51	+ 0.06	.36	1.38	1.80	91	.37	.47	1.67	2.51
52	.12	.37	1.47	1.96	92	.30	.47	1.67	2.44
53	.12	.38	1.55	2.05	93	.23	.47	1.67	2.37
54	.12	.38	1.60	2.10	94	.18	.47	1.67	2.32
55	+ 0.13	+ 0.38	+ 1.64	+ 2.15	95	+ 0.18	+ 0.47	+ 1.67	+ 2.32
56	.14	.39	1.66	2.19	96	.22	.47	1.67	2.36
57	.15	.39	1.67	2.21	97	.27	.47	1.67	2.41
58	.16	.40	1.67	2.23	98	.27	.47	1.67	2.41
59	.17	.40	1.67	2.24	99	.26	.46	1.67	2.39
60	+ 0.19	+ 0.41	+ 1.67	+ 2.27	100	+ 0.26	+ 0.46	+ 1.67	+ 2.39
61	.20	.41	1.67	2.28	101	.27	.46	1.67	2.40
62	.22	.41	1.67	2.30	102	.29	.46	1.67	2.42
63	.26	.42	1.67	2.35	103	.29	.46	1.67	2.42
64	.28	.42	1.67	2.37	104	.29	.46	1.67	2.42
65	+ 0.27	+ 0.43	+ 1.67	+ 2.37	105	+ 0.36	+ 0.45	+ 1.67	+ 2.48
66	.25	.43	1.67	2.35	106	.44	.45	1.67	2.56
67	.22	.43	1.67	2.32	107	.52	.45	1.67	2.64
68	.22	.44	1.67	2.33	108	.56	.45	1.67	2.68
69	.22	.44	1.67	2.33	109	.57	.44	1.67	2.68

TABLE X.—*Systematic Corrections, etc.*—Continued.

DIRECT OBSERVATIONS.

N. P. D.	Division Correction.	Flexure Correction.	$\Delta Z+\Delta\varphi$	Total.
°	″	″	″	″
110	+ 0.57	+ 0.44	+ 1.67	+ 2.68
111	.52	.44	1.67	2.63
112	.48	.44	1.67	2.59
113	.49	.43	1.67	2.59
114	.52	.43	1.67	2.62
115	+ 0.53	+ 0.43	+ 1.67	+ 2.63
116	.50	.42	1.67	2.59
117	.46	.42	1.67	2.55
118	.44	.42	1.67	2.53
119	.42	.41	1.67	2.50
120	+ 0.40	+ 0.41	+ 1.67	+ 2.48
121	.34	.40	1.67	2.41
122	.27	.40	1.67	2.34
123	.24	.39	1.67	2.30
124	.22	.39	1.67	2.28
125	+ 0.19	+ 0.39	+ 1.67	+ 2.25
126	.15	.38	1.67	2.20
127	.11	.38	1.67	2.16
128	.12	.37	1.67	2.16
129	.15	.37	1.67	2.19
130	+ 0.14	+ 0.36	+ 1.67	+ 2.17
131	.08	.36	1.67	2.11
132	+ 0.02	.35	1.67	2.04
133	— 0.07	.34	1.67	1.94
134	.12	.34	1.67	1.89
135	— 0.13	+ 0.33	+ 1.67	+ 1.87
136	.07	.33	1.67	1.93
137	— 0.01	.32	1.67	1.98
138	0.00	+ 0.31	+ 1.67	+ 1.98
S. P.				
325	+ 0.13	— 0 27	+ 1.10	+ 0.96
326	.14	.26	1.10	0.98
327	.15	.26	1.10	0.99
328	.16	.25	1.10	1.01
329	.17	.24	1.10	1.03
330	+ 0.19	— 0.24	+ 1.10	+ 1.05
331	.20	.23	1.10	1.07
332	.22	.22	1.10	1.10
333	.26	.21	1.10	1.15
334	.28	.21	1.10	1.17
335	+ 0.27	— 0.20	+ 1.10	+ 1.17
336	.25	.19	1.10	1.16
337	.22	.18	1.10	1.14
338	.22	.18	1.10	1.14
339	.22	.17	1.10	1.15
340	+ 0.22	— 0.16	+ 1.10	+ 1.16
341	.23	.15	1.10	1.18
342	.24	.15	1.10	1.19
343	.25	.14	1.10	1.21
344	.27	.13	1.10	1.24
345	+ 0.28	— 0.12	+ 1.10	+ 1.26
346	.31	.11	1.10	1.30
347	.35	.11	1.10	1.34
348	.40	.10	1.10	1.40
349	.45	.09	1.10	1.46
350	+ 0.46	— 0.08	+ 1.10	+ 1.48
351	.45	.07	1.10	1.48
352	.44	.07	1.10	1.47
353	.41	.06	1.10	1.45
354	.38	.05	1.10	1.43
355	+ 0.36	— 0.04	+ 1.10	+ 1.42
356	.36	.03	1.10	1.43
357	.36	.03	1.10	1.43
358	.40	.02	1.10	1.48
359	+ 0.44	— 0.01	+ 1.10	+ 1.53

TABLE X.—*Systematic Corrections, etc.*—Continued.

REFLECTION OBSERVATIONS.

N. P. D.	Division Correction.	Flexure Correction.	$\Delta Z+\Delta\varphi$	Total.	N. P. D.	Division Correction.	Flexure Correction.	$\Delta Z+\Delta\varphi$	Total.
°	″	″	″	″	°	″	″	″	″
0	− 0.29	+ 0.34	+ 0.02	+ 0.07	56	+ 0.06	+ 0.35	− 0.55	− 0.14
1	.27	.34	.02	.09	57	.12	.35	.55	.08
2	.26	.34	.02	.10	58	.12	.35	.55	.08
3	.26	.35	.02	.11	59	+ 0.08	.34	.55	.13
4	.27	.35	.02	.10	60	0.00	.34	.55	.21
5	− 0.27	+ 0.35	+ 0.02	+ 0.10	61	− 0.07	+ 0.34	− 0.55	− 0.28
6	.23	.36	.02	.15	62	.13	.33	.55	.35
7	.19	.36	.02	.19	63	.15	.33	.55	.37
8	.18	.36	.02	.20	64	.12	.32	.55	.35
9	.22	.36	.02	.16	65	.11	.32	.55	.34
10	− 0.29	+ 0.37	+ 0.02	+ 0.10	66	− 0.14	+ 0.32	− 0.55	− 0.37
11	.36	.37	.02	+ 0.03	67	.18	.31	.55	.42
12	.43	.37	.02	− 0.04	68	.21	.31	.55	.45
13	.44	.37	.02	.05	69	.24	.30	.55	.49
14	.41	.37	.02	.02	70	.26	.30	.55	.51
15	− 0.37	+ 0.38	+ 0.02	+ 0.03	71	− 0.33	+ 0.30	− 0.55	− 0.58
16	.36	.38	.02	.04	72	.39	.29	.55	.65
17	.36	.38	.02	.04	73	.42	.29	.55	.68
18	.38	.38	.02	.02	74	.44	.28	.55	.71
19	.40	.38	.02	.00	75	.46	.28	.55	.73
20	− 0.43	+ 0.38	+ 0.02	− 0.03	76	− 0.49	+ 0.27	− 0.55	− 0.77
21	.45	.38	.02	.05	77	.52	.27	.55	.80
22	.46	.39	.02	.05	78	.52	.26	.55	.81
23	.45	.39	.02	.04	79	.50	.26	.55	.79
24	.41	.39	.02	.00	80	.48	.25	.55	.78
25	− 0.36	+ 0.39	+ 0.02	+ 0.05	81	− 0.51	+ 0.25	− 0.55	− 0.81
26	.32	.39	.02	.09	82	.56	.24	.55	.87
27	.29	.39	.02	.12	83	.57	.24	.55	.88
28	.27	.39	.02	.14	84	.56	.23	.55	.88
29	.25	.39	.02	.16	85	.53	.23	.55	.85
30	− 0.24	+ 0.39	+ 0.02	+ 0.17	86	− 0.46	+ 0.22	− 0.55	− 0.79
31	.23	.39	.02	.18	87	.38	.21	.55	.72
32	.22	.39	.02	.19	88	.30	.21	.55	.64
33	.22	.39	.02	.19	89	.29	.20	.55	.64
34	.22	.39	.02	.19	90	.29	.20	.55	.64
35	− 0.22	+ 0.39	+ 0.02	+ 0.19	91	− 0.27	+ 0.19	− 0.55	0.63
36	.24	.39	.02	.17	92	.26	.19	.55	.62
37	.27	.39	.02	.14	93	.26	.18	.55	.63
38	.28	.39	.02	.13	94	.27	.17	.55	.65
39	.26	.39	.02	.15	95	.27	.17	.55	.65
40	− 0.23	+ 0.38	+ 0.02	+ 0.17	96	− 0.23	+ 0.16	− 0.55	− 0.62
41	.20	.38	.02	.20	97	.19	.15	.55	.59
42	.19	.38	.02	.21	98	.18	.15	.55	.58
43	.17	.38	.02	.23	99	.22	.14	.55	.63
44	.16	.38	.02	.24	100	.29	.14	.55	.70
45	− 0.15	+ 0.38	+ 0.02	+ 0.25	101	− 0.36	+ 0.13	− 0.55	− 0.78
46	.14	.38	.02	.26	102	.43	.12	.55	.86

Since the assumed value of the latitude is $+38^\circ\ 53'\ 38''.80$, the value given by each year's observations will be $+38^\circ\ 53'\ 38''.80 + \Delta\varphi$.

The observed north polar distances used in computing $\Delta\varphi$ had been corrected for constant error in the zenith point, and, in order to separate the values of the latitude obtained from direct and reflection observations, these corrections should be removed; hence—

Latitude from direct observations.... $= +38^\circ\ 53'\ 38''.80 + \Delta\varphi + \Delta Z$
Latitude from reflection observations. $= +38^\circ\ 53'\ 38''.80 + \Delta\varphi - \Delta Z$

The following table exhibits the results obtained from 1866 to 1882:

TABLE XI.

Year.	Latitude from Direct Observations.	Latitude from Reflection Observations.	Mean.
	′ ′ ″	° ′ ″	″
1866	+ 38 53 38.73	+ 38 53 37.67	38.20
1867	39.16	37.48	38.32
1868	38.69	37.73	38.21
1869	38.62	38.90	38.76
1870	38.71	39.57	39.14
1871 } 1872 }	39.11	36.49	37.80
1873	38.91	37.89	38.40
1874	38.31	38.27	38.29
1875	39.22	37.32	38.27
1876	38.64	37.50	38.07
1877	39.14	37.58	38.36
1878	38.07	38.29	38.18
1879	40.41	37.23	38.82
1880	36.36	38.12	37.24
1881	39.50	37.60	38.55
1882	+ 38 53 37.70	+ 38 53 38.78	38.24

POSITIONS AND SEMI-DIAMETERS OF THE SUN, MOON, AND PLANETS, DEDUCED FROM OBSERVATIONS WITH THE TRANSIT CIRCLE IN 1882 AND COMPARED WITH THE TABLES.

The results of the observations are given on pages 189 to 198 and require very little explanation.

When both limbs of an object presenting a fully illuminated disk have been observed, the adopted position of the center is the mean of that of the two limbs given in the twelfth and fourteenth columns of the observations. When only one full limb has been observed, the right ascension of the center is derived from the observed place of the limb by applying the "Time of the semi-diameter passing the meridian," taken from the Ephemeris. The declination of the center is obtained by applying the semi-diameter of the Ephemeris.

If one of the limbs observed was defective, the observed difference of right ascension or declination of limbs is multiplied by the ratio of half this difference to the true

semi-diameter, and the observed semi-diameter thus deduced is applied to the observed position of the full limb to obtain that of the center. The factors are determined as follows:

Let

i = the elongation of Earth and Sun as seen from the Planet;

$b = \cos i$;

$\delta\ \delta'$ = declinations of Planet and Sun;

A = difference of right ascensions of Planet and Sun;

θ = the angle which the line of cusps makes with the meridian;

f, f' = factors by which the measured diameters in right ascension and declination must be multiplied to obtain true semi-diameters.

To find f, we have

$$\tan\theta = \frac{\cos\delta\tan\delta'}{\text{Sin A}} - \frac{\sin\delta}{\tan \text{A}}$$

When the planet is gibbous;

$$g = \cos\theta\sqrt{b^2 + \tan^2\theta} = \cos\theta'' \quad , \quad \text{when } \sin\theta'' = \cos\theta\sin i$$
$$g' = \sin\theta\sqrt{b^2 + \cot^2\theta} = \cos\theta' \quad , \quad \text{when } \sin\theta' = \sin\theta\sin i$$

$$f = \frac{1}{1+g} \text{ and } f' = \frac{1}{1+g'}$$

When the illuminated disk is a crescent,

$$g = \sin\theta \qquad f = \frac{1}{1+g}$$

$$g' = \cos\theta \qquad f' = \frac{1}{1+g'}$$

For the Moon the correction for defective illumination in N. P. D. is obtained with more facility from the following formulæ, where the quantities have the same signification as above, E being an auxiliary angle:

$$\tan \text{E} = \tan\delta\cos \text{A}$$
$$\sin\theta' = \sin(\delta' - \text{E})\cos \quad \sec \text{E}$$
$$\cos\theta' = g'$$

When the center of light of Mercury has been observed, its reduction to the center of the planet is denoted by ε, and its value is obtained from the empirical formulæ

$$n = \frac{(1-b)(5+b)}{12}$$

In right ascension - - - - ε = semi-diameter $\times\, n\cos\theta$

In north polar distance - - - ε = semi-diameter $\times\, n\sin\theta$

The north polar distances are also corrected for parallax in altitude, found at the foot of the pages of observations, and for errors of division, flexure, etc., taken from Table X.

A discussion of all the observations of the Sun made in 1882 gives the following results:

TABLE XII.—*Corrections to the Semi-diameters of the Sun, given in the American Ephemeris, obtained from the mean of all the measures made by each Observer in* 1882.

Observer.	Sidereal Time of Semi-diameter passing the Meridian.	Vertical Semi-diameter.
	s.	″
EASTMAN . . .	— 0.05_{12}	— 1.2_{13}
SKINNER . . .	— 0.09_{12}	— 1.6_{10}
ROCK	— 0.10_{16}	— 0.8_{18}
WINLOCK . . .	— 0.10_{24}	— 0.7_{29}

The subscript figures indicate the number of observations on which each value depends.

When only one limb of the Sun was observed, the quantity in the last column of the observations is the semi-diameter of the Ephemeris corrected by means of the above table.

In 1882 the positions of the Moon in the American Ephemeris are derived from PEIRCE'S Tables and are given for the moment of transit over the meridian of Washington. In this volume the printed corrections to PEIRCE'S Tables are consequently derived from the direct comparison with the observed places of the American Ephemeris. The corrections to HANSEN'S Tables are derived from a comparison with the data in the British Nautical Almanac where the places are derived from HANSEN'S Tables.

The observations of the minor planets Ceres, Pallas, Juno, and Vesta are compared with the ephemerides in the Appendix to the English Nautical Almanac, from which the position is interpolated for the difference in longitude. The other minor planets are compared with the ephemerides in the Berliner Jahrbuch.

The observed time of transit converted into Washington mean time and increased by $6^h\ 1^m.8$ gives the Berlin mean time of transit. Subtracting the "aberration time" of the Ephemeris leaves the Berlin mean time at which the light left the planet, and for this instant the position of the planet is interpolated from the Ephemeris in the Jahrbuch and compared with the observed place.

TABLE A.—*Adopted Values of the Collimation, Level, and Azimuth Constants employed in the reduction of the Observations with the Transit Circle in* 1882.

Adopted value of C_0 during the year.

$C_0 = +0^s.096$.

Month and Day.		c	b	a	Month and Day.		c	b	a
1882.	d.	s.	s.	s.	1882.	d.	s.	s.	s.
January	11.3	− 0.073	− 0.225	+ 0.253	March	10.0	− 0.117	− 0.394	+ 0.252
	14.4	.026	.211	.202		11.4	.072	.336	.369
	17.4	.023	.200	.228		12.9	.084	.352	.534
	19.4	.047	.294	.068		13.4	.048	.279	.534
	23.0	− 0.004	.270	.082		14.4	.042	.292	.293
	23.4	+ 0.011	− 0.224	+ 0.082		19.3	− 0.087	− 0.391	+ 0.104
	24.4	+ 0.029	.244	− 0.099		23.0	.070	.340	.100
	26.9	− 0.096	.310	− 0.043		23.4	.076	.345	+ 0.100
	27.4	.048	.279	+ 0.278		25.0	.038	.294	− 0.037
	29.2	.025	.255	.628		25.3	0.054	0.317	− 0.037
	29.9	− 0.026	− 0.224	+ 0.883		26.4	− 0.123	− 0.649*	+ 0.043
February	1.0	.050	.262	.494		28.4	.092	.737	.472
	1.4	.034	.258	.494		29.4	.103	.408	.693
	2.0	.055	.318	.350		30.0	.148	.474	.593
	2.4	.047	.300	.350		30.4	.106	.442	.593
	3.4	− 0.047	− 0.314	+ 0.251		31.0	− 0.094	− 0.426	+ 0.536
	6.0	.067	.328	.193		31.3	.090	.397	.536
	6.4	..64	.326	.193	April	1.0	.126	.423	.459
	6.9	.060	.322	.264		1.3	.147	.484	.459
	10.0	.078	.376	.503		7.4	.148	.570	.354
	10.5	− 0.052	− 0.340	+ 0.503		11.4	− 0.032	− 0.400	+ 0.310
	10.7	.039	.300	.503		12.0	.076	.359	.013
	10.9	.059	.308	.485		12.4	.080	.428	.013
	15.0	.099	.362	.766		12.8	.063	.382	.013
	15.4	.094	.363	.766		13.0	.106	.476	.146
	17.0	− 0.128	− 0.438	+ 0.950		13.5	− 0.086	− 0.470	+ 0.146
	17.4	.086	.375	.950		14.3	.098	.441	.000
	18.0	.050	.304	.931		17.0	.145	.519	.107
	23.4	.028	.278	.191		17.4	.126	.536	+ 0.107
	24.4	.042	.318	.032		18.0	.160	.554	− 0.025
	25.0	− 0.052	− 0.262	+ 0.070		18.4	− 0.139	− 0.556	− 0.025
	25.3	.044	.291	+ 0.070		20.0	.164	.646	+ 0.177
	26.3	.074	.370	− 0.008		24.4	.110	.408	+ 0.100
	27.0	.095	.381	+ 0.071		25.1	.126	.453	− 0.100
	27.4	.082	.394	.071		25.3	.116	.488	.100
March	2.0	− 0.142	− 0.418	+ 0.683		27.0	− 0.121	− 0.534	− 0.090
	2.4	.134	.459	.683		27.4	.122	.566	− 0.090
	3.0	.153	.452	.816		28.0	.150	.558	+ 0.105
	3.3	.122	.399	.816		30.4	.110	.575	− 0.100
	4.4	.083	.320	.852	May	1.0	.161	.598	.063

*On March 26.4, before $8^h.6$ use $b = -0.300$, after that hour the tabular value.

TABLE A.—*Adopted Values of the Collimation, Level, and Azimuth Constants, etc.*—Cont'd.

Month and Day.		c	b	a	Month and Day.		c	b	a
1882.	d.	s.	s.	s.	1882.	d.	s.	s.	s.
May	1.4	− 0.133	− 0.588	− 0.063	July	1.4	− 0.207	− 0.390	+ 0.124
	2.5	.082	.515	.000		2.9	.208	.330	+ 0.036
	3.0	.126	.538	.197		5.4	.161	.353	− 0.418
	3.4	.118	.508	.197		6.0	.192	.352	.328
	9.0	.210	.639	.304		6.4	.169	.338	.328
	17.0	− 0.174	− 0.620	− 0.011		6.9	− 0.206	− 0.347	− 0.494
	18.4	.118	.517	+ 0.030		9.8	.215	.418	− 0.212
	23.0	.163	.632	.320		10.0	.252	.467	+ 0.001
	23.4	.137	.613	.320		10.4	.228	.436	.001
	24.0	.172	.609	.136		11.4	.213	.414	.240
	25.4	− 0.126	− 0.508	+ 0.233		12.0	− 0.244	− 0.459	+ 0.097
	25.9	.151	.563	− 0.012		12.9	.220	.395	.000
	26.4	.145	.570	− 0.012		15.0	.216	.337	− 0.134
	29.0	.178	.690	+ 0.390		15.4	.201	.353	.134
	29.4	.150	.630	.390		24.0	.242	.384	.353
	30.0	− 0.175	− 0.649	+ 0.281		24.4	− 0.203	− 0.425	− 0.353
	31.0	.217	.698	.264		25.0	.243	.400	.140
June	1.4	.148	.618	.548		25.4	.216	.330	− 0.140
	2.0	.178	.677	.237		27.9	.251	.372	+ 0.107
	2.5	.154	.653	.237		28.5	.199	.328	+ 0.107
	4.9	− 0.170	− 0.583	+ 0.215	August	4.4	− 0.212	− 0.316	− 0.150
	5.4	.141	.556	.215		6.9	.240	.342	− 0.350
	5.9	.176	.644	.066		8.5	.199	.311	+ 0.150
	6.5	.146	.643	.066		10.1	.227	.288	− 0.119
	7.3	.172	.537	.158		10.4	.198	.277	.119
	8.0	− 0.226	− 0.686	+ 0.094		11.0	− 0.200	− 0.286	− 0.224
	8.3	.194	.655	.094		11.4	.188	.284	.224
	8.9	.225	.646	.150		14.5	.208	.294	.276
	13.5	.170	.361	.222		15.9	.223	.331	.031
	14.0	.206	.421	.050		16.4	.215	.312	.031
	14.9	− 0.230	− 0.450	+ 0.100		17.4	− 0.216	− 0.303	− 0.082
	16.5	.186	.414	.083		18.5	.181	.249	.085
	16.9	.226	.444	.000		20.4	.189	.267	.385
	19.4	.196	.413	.456		21.0	.203	.279	.420
	20.0	.187	.379	+ 0.219		21.2	.225	.324	.420
	21.0	− 0.211	− 0.405	− 0.068		22.5	− 0.184	− 0.245	− 0.500
	21.4	.197	.398	.068		24.0	.215	.308	.350
	22.0	.217	.437	.111		25.0	.217	.298	.361
	22.4	.198	.410	− 0.111		25.3	.212	.312	.361
	23.3	.211	.448	+ 0.108		28.3	.180	.250	.443
	24.0	− 0.247	− 0.444	+ 0.097		29.4	− 0.182	− 0.281	− 0.546
	26.1	.255	.427	.432	September	1.4	.216	.319	.495
	27.0	.232	.356	.348		5.3	.198	.277	.247
	27.4	.198	.372	.348		15.0	.204	.272	.509
	29.4	.201	.320	.302		15.4	.172	.332	.509

TABLE A.—*Adopted Values of the Collimation, Level, and Azimuth Constants, etc.*—Cont'd.

Month and Day.		*c*	*b*	*a*	Month and Day.		*c*	*b*	*a*
1882.	d.	s.	s.	s.	1882.	d.	s.	s.	s.
September	18.4	— 0.195	— 0.348	— 0.476	November	21.7	— 0.031	— 0.072	— 1.031
	19.0	.238	.368	.362		22.8	.028	.088	0.924
	19.3	.229	.391	.362		23.4	.082	.138	1.020
	20.0	.231	.388	.390		24.0	.070	.128	0.944
	21.0	.221	.437	.338		24.4	.053	.114	.944
	23.9	— 0.156	— 0.300	— 0.530		24.8	— 0.038	— 0.091	— 0.893
	29.0	.169	.326	.854		25.4	.045	.098	.747
	29.4	.140	.293	.854		27.0	.072	.136	.840
October	3.0	.174	.372	.627		27.4	.054	— 0.112	.840
	3.4	.158	.373	.627		29.7	.020	+ 0.066	.711
	4.4	— 0.158	— 0.441	— 0.718		30.0	— 0.031	+ 0.060	— 0.711
	5.4	.169	.469	.738		30.4	.023	+ 0.055	.711
	6.4	.176	.454	.763	December	1.3	.058	— 0.010	.793
	7.4	.163	.427	.697		2.3	.064	.000	.830
	9.0	.200	.467	.728		3.3	.026	+ 0.044	.645
	14.0	— 0.173	— 0.446	— 0.738		3.9	— 0.039	+ 0.049	— 0.520
	14.3	.160	.431	.738		4.3	.044	.042	.750
	30.5	.142	.346	.718		4.7	.047	+ 0.018	.850
	31.1	.174	.406	.734		6.0	.092	— 0.115	.704
	31.4	.167	.406	.734		6.3	.077	— 0.098	.704
	31.9	— 0.182	— 0.440	— 0.734		7.1	— 0.017	+ 0.054	— 0.440
November	1.3	.176	.418	.734		7.3	+ 0.016	+ 0.039	.650
	2.8	.053	.140	.771		7.7	+ 0.048	+ 0.132	.560
	3.0	.079	.227	.771		10.9	— 0.056	— 0.010	.570
	5.9	.069	.141	.831		11.4	.044	— 0.002	.600
	6.4	— 0.075	— 0.151	— 0.831		11.7	— 0.025	+ 0.035	— 0.692
	8.4	.098	.220	.801		11.9	.048	+ 0.019	.781
	8.7	.067	.177	.848		12.4	.052	— 0.106	.781
	9.0	.124	.260	.848		14.4	.055	.109	.812
	11.4	.128	.312	.750		15.9	.009	.065	.664
	13.7	— 0.064	— 0.245	— 0.751		16.4	— 0.005	— 0.006	— 0.729
	14.4	.063	.135	.747		18.3	.036	.092	.700
	15.0	.089	.185	.861		19.3	.039	.102	.550
	15.4	.062	.169	.861		26.4	.058	.123	.735
	15.8	.040	.136	0.861		28.5	.022	.081	.765
	16.3	— 0.088	— 0.191	— 1.000		30.3	— 0.023	— 0.063	— 0.693
	18.8	.030	.093	0.870		31.2	.051	.097	.880
	20.4	.053	.073	.984					
	20.8	.028	.100	0.910					
	21.4	.047	.094	1.031					

TABLE B.—*Adopted Corrections and Rates of the Parkinson and Frodsham Sidereal Clock, No.* 611, *in* 1882.

Month and Day.	Observer.	Sidereal Hour.	Clock Corrections.	Hourly Rate.
1882. d.		h.	s.	s.
Jan. 11.3	E.	2.98	+ 19.192	+ 0.008
		3.72	+ 19.198	
14.4	W.	5.90	+ 20.127	
17.4	R.	6.70	+ 21.434	
19.4	R.	4.36	+ 22.272	+ 0.050
		6.64	+ 22.386	
22.9	E.	17.60	+ 23.870	+ 0.013
23.1	.	22.30	+ 23.932	
23.3	E.	3.60	+ 24.092	+ 0.063
		6.27	+ 24.260	
24.4	S.	4.90	+ 25.613	+ 0.078
		7.53	+ 25.817	
26.9	E.	18.32	+ 27.802	+ 0.006
27.3	.	3.88	+ 27.858	+ 0.066
		6.78	+ 28.048	
29.9	W.	18.20	+ 29.230	
31.9	S.	19.42	+ 30.925	+ 0.007
Feb. 1.1	.	22.60	+ 30.948	
1.3	S.	3.00	+ 31.065	+ 0.051
		6.27	+ 31.233	— 0.012
		7.63	+ 31.217	
1.9	R.	19.22	+ 31.688	+ 0.010
2.3	.	3.50	+ 31.770	+ 0.048
		8.52	+ 32.010	
3.4	W.	5.54	+ 32.310	+ 0.027
		7.67	+ 32.367	
5.9	R.	19.20	+ 34.392	+ 0.032
6.1	.	23.20	+ 34.520	
6.3	R.	3.63	+ 34.633	+ 0.038
		7.53	+ 34.783	
6.9	W.	18.85	+ 34.920	
9.9	R.	19.11	+ 36.447	+ 0.042
10.1	.	23.00	+ 36.610	
10.4	R.	6.88	+ 36.672	+ 0.033
		9.42	+ 36.756	+ 0.017
		15.34	+ 36.857	
10.9	W.	18.77	+ 36.870	— 0.112
		19.57	+ 36.780	
14.9	W.	18.96	+ 38.232	+ 0.029
15.1	.	23.58	+ 38.365	
15.4	W.	6.15	+ 38.320	— 0.001
		8.22	+ 38.318	
16.9	S.	19.33	+ 38.507	+ 0.012
		23.00	+ 38.550	
17.4*	S.	6.33	— 22.100	— 0.027
		9.00	— 22.173	
1882. d.		h.	s.	s.
Feb. 17.9	W.	20.00	— 22.457	+ 0.009
18.1	.	1.03	— 22.410	
23.3	W.	5.42	— 21.845	+ 0.057
		8.37	— 21.677	
24.3	R.	4.94	— 21.020	+ 0.042
		9.40	— 20.833	
24.9	S.	20.72	— 20.575	+ 0.017
25.1	.	0.55	— 20.510	
25.3	S.	5.20	— 20.380	+ 0.020
		8.90	— 20.307	
26.3	E.	5.93	— 19.760	— 0.033
		7.15	— 19.800	
26.9	W.	20.30	— 19.404	— 0.002
27.1	.	0.57	— 19.413	
27.3	R.	7.15	— 19.132	+ 0.026
		10.17	— 19.053	
Mar. 1.9	R.	20.37	— 19.690	— 0.035
2.1	.	0.57	— 19.837	
2.3	R.	7.03	— 19.932	— 0.019
		9.84	— 19.984	
2.9	W.	21.04	— 20.616	— 0.014
3.1	.	0.40	— 20.663	
3.3	W.	6.15	— 20.800	— 0.038
		10.40	— 20.960	
4.3	E.	6.03	— 20.747	0.000
		10.68	— 20.748	
9.9	R.	21.10	— 19.573	— 0.011
10.1	.	1.22	— 19.618	
11.4	W.	8.20	— 19.977	
13.4	S.	7.87	— 20.173	+ 0.044
		9.83	— 20.087	
14.3	R.	6.98	— 19.778	+ 0.015
		10.30	— 19.727	
19.3	W.	7.52	— 18.628	
22.9	W.	22.20	— 19.630	+ 0.025
23.1	.	1.43	— 19.550	+ 0.012
		9.48	— 19.452	
24.9	W.	22.12	— 18.892	+ 0.021
25.1	.	1.60	— 18.820	
25.3	W.	6.48	— 18.650	— 0.021
		9.03	— 18.703	
26.3	R.	7.40	— 18.160	+ 0.043
		8.57	— 18.110	
28.3	E.	7.50	— 19.250	— 0.034
		10.72	— 19.360	

* Feb. 17.1. Set Clock forward one minute, and shortened the pendulum-rod.

TABLE B.—*Adopted Corrections and Rates of the Sidereal Clock, etc.*—Continued.

Month and Day.	Observer.	Sidereal Hour.	Clock Corrections.	Hourly Rate.
1882. d.		h.	s.	s.
Mar. 29.3	S.	7.17	— 19.710	— 0.017
		9.88	— 19.755	
30.3	R.	8.70	— 19.917	— 0.020
		11.12	— 19.965	
30.9	W.	22.80	— 20.235	+ 0.009
31.1	.	2.43	— 20.203	+ 0.010
		6.97	— 20.157	— 0.053
		8.10	— 20.217	
Apr. 1.3	E.	7.40	— 19.923	
7.4	R.	10.10	— 22.155	— 0.053
		13.07	— 22.313	
11.	R.	11.12	— 24.245	
11.9	W.	23.42	— 24.172	— 0.013
12.1	.	3.43	— 24.223	+ 0.006
		9.72	— 24.186	
12.8	W.	22.00	— 24.093	
12.9	R.	23.50	— 23.700	+ 0.012
13.1	.	3.43	— 23.653	
13.4	R.	11.90	— 23.780	+ 0.061
		13.78	— 23.665	
14.3	S.	9.00	— 23.645	+ 0.014
		9.83	— 23.633	
16.9	E.	23.70	— 23.043	— 0.001
17.1	.	4.37	— 23.050	
17.3	E.	9.03	— 23.007	— 0.016
		12.43	— 23.060	
17.9	W.	0.55	— 23.160	— 0.014
18.1	.	3.43	— 23.200	
18.3	W.	10.00	— 23.230	— 0.067
		11.23	— 23.313	
19.9	S.	23.92	— 23.732	— 0.078
20.1	.	3.60	— 24.020	
24.3	W.	9.04	— 25.244	
25.1	E.	4.90	— 25.210	— 0.004
		9.03	— 25.227	
26.9	R.	0.85	— 25.115	— 0.002
27.3	.	10.43	— 25.133	— 0.044
		11.43	— 25.177	
27.9	W.	0.28	— 25.448	— 0.028
28.1	.	4.12	— 25.556	
30.4	S.	11.67	— 25.847	0.000
		12.30	— 25.847	
30.9	R.	0.57	— 25.703	— 0.031
May 1.1	.	4.88	— 25.837	
1.3	R.	10.45	— 25.962	— 0.002
		13.30	— 25.968	

Month and Day.	Observer.	Sidereal Hour.	Clock Corrections.	Hourly Rate.
1882. d.		h.	s.	s.
May 2.5	W.	14.28	— 26.462	— 0.010
		16.20	— 26.480	
2.9	E.	0.40	— 26.170	— 0.010
3.1	.	5.22	— 26.215	
3.4	E.	11.10	— 26.258	+ 0.026
		14.86	— 26.162	
8.9	R.	1.90	— 26.875	— 0.024
9.1	.	5.18	— 26.955	
16.9	R.	1.63	— 33.790	— 0.052
17.1	.	4.50	— 33.940	
18.4	W.	12.13	— 35.110	+ 0.033
		13.65	— 35.060	
22.9	E.	1.63	— 37.767	— 0.021
23.2	.	8.14	— 37.902	
23.5	E.	13.83	— 38.080	— 0.073
		15.82	— 38.225	
23.9	S.	2.35	— 38.080	— 0.033
24.1	.	5.35	— 38.180	
25.3	R.	11.98	— 38.800	+ 0.003
		17.00	— 38.783	
25.9	W.	1.90	— 39.100	— 0.009
26.3	.	12.26	— 39.190	— 0.009
		15.12	— 39.215	
28.9	R.	2.58	— 41.105	— 0.023
29.1	.	5.84	— 41.180	
29.4	R.	14.40	— 41.548	— 0.017
		16.30	— 41.580	
29.9	W.	1.82	— 41.968	— 0.023
30.1	.	6.32	— 42.075	
30.9	E.	2.23	— 42.397	— 0.040
31.1	.	7.53	— 42.610	
June 1.3	S.	12.80	— 44.377	+ 0.088
		13.53	— 44.313	
1.9	R.	2.45	— 44.560	— 0.026
2.1	.	6.16	— 44.656	
2.4	R.	14.25	— 44.972	— 0.016
		16.88	— 45.014	
4.9	S.	2.33	— 47.660	— 0.032
5.3	.	13.20	— 48.005	— 0.046
		15.33	— 48.103	
5.9	R.	3.18	— 48.242	— 0.025
6.1	.	5.10	— 48.290	
6.4	R.	14.97	— 48.433	— 0.037
		18.20	— 48.553	
7.3	W.	13.48	— 49.338	

TABLE B.—*Adopted Corrections and Rates of the Sidereal Clock, etc.*—Continued.

Month and Day.	Observer.	Sidereal Hour.	Clock Corrections.	Hourly Rate.
1882. d.		h.	s.	s.
June 7.9	E.	3.80	— 49.340	— 0.003
8.1	.	7.05	— 49.350	— 0.041
8.3	.	13.63	— 49.623	
8.9	S.	2.93	— 49.687	
13.3	S.	13.40	— 53.843	— 0.032
		16.40	— 53.940	
13.9	R.	3.40	— 53.975	— 0.041
14.1	.	6.90	— 54.117	
14.9	W.	3.44	— 54.744	
16.5	W.	18.87	— 56.413	
16.9	S.	3.40	— 56.472	
19.4	W.	14.80	— 60.080	— 0.089
		17.17	— 60.293	
19.9	E.	3.50	— 60.454	+ 0.006
20.1	.	7.35	— 60.430	
20.9	S.	4.92	— 60.418	— 0.005
21.1	.	7.57	— 60.430	
21.2	S.	11.98	— 60.600	— 0.010
		15.60	— 60.635	
21.9	R.	3.77	— 60.830	— 0.022
22.4	.	15.58	— 61.084	— 0.049
		18.90	— 61.247	
23.4	W.	14.92	— 62.055	
23.9	E.	3.76	— 62.552	— 0.020
24.1	.	7.60	— 62.630	
26.1	R.	7.57	— 64.813	
26.9	W.	4.25	— 65.863	— 0.002
27.1	.	7.57	— 65.870	
27.4	W.	15.27	— 66.273	+ 0.007
		18.43	— 66.250	
29.4	S.	15.60	— 7.335	— 0.027*
		18.08	— 7.402	
July 1.4	W.	16.30	— 8.985	— 0.084
		18.28	— 9.152	
2.9	S.	4.68	— 9.840	
5.3	W.	15.17	— 11.563	— 0.004
		18.68	— 11.578	
5.9	E.	5.00	— 11.810	— 0.037
6.1	.	9.87	— 11.990	
6.4	E.	15.68	— 12.170	— 0.019
		19.42	— 12.242	
6.9	S.	4.96	— 12.224	
9.8	W.	2.75	— 14.825	— 0.042
		3.70	— 14.865	
1882. d.		h.	s.	s.
July 9.9	E.	4.68	— 14.862	— 0.056
10.1	.	10.10	— 15.165	
10.4	E.	15.60	— 15.478	— 0.053
		19.25	— 15.672	
11.4	S.	17.30	— 17.057	— 0.076
		19.50	— 17.224	
11.9	R.	5.38	— 17.547	— 0.056
12.1	.	9.80	— 17.795	
12.9	W.	5.30	— 19.134	
14.9	S.	5.28	— 20.448	— 0.034
		10.00	— 20.610	
15.3	S.	15.73	— 20.727	— 0.012
		18.90	— 20.765	
23.9	R.	6.75	— 26.778	— 0.024
24.1	.	9.80	— 26.850	
24.3	R.	15.62	— 27.020	— 0.004
		19.65	— 27.038	
24.9	W.	6.28	— 27.678	— 0.034
25.1	.	9.93	— 27.803	
25.3	W.	16.48	— 28.162	— 0.028
		19.60	— 28.250	
27.9	R.	6.48	— 30.492	— 0.072
28.4	.	18.00	— 31.317	— 0.058
		21.18	— 31.502	
Aug. 4.3	E.	16.20	— 39.338	— 0.077
		17.40	— 39.430	
6.9	E.	6.32	— 43.142	
8.5	W.	20.40	— 46.407	— 0.091
		21.20	— 46.480	
10.1	W.	12.78	— 48.310	— 0.059
		17.10	— 48.567	— 0.035
		18.13	— 48.603	
10.9	E.	7.08	— 48.652	— 0.053
11.1		12.03	— 48.913	
11.3	E.	17.50	— 48.957	— 0.014
		19.17	— 48.980	
14.3	W.	18.08	— 51.452	— 0.051
		21.80	— 51.640	
15.9	E.	7.30	— 53.047	— 0.063
16.4		19.41	— 53.811	
17.4	W.	18.32	— 55.458	— 0.202
		18.75	— 55.545	
18.5	W.	22.55	— 13.112†	
20.3	W.	18.44	— 12.162	

* June 27.9, set clock back one minute.
† Clock was stopped on August 17.9 and the pendulum lengthened 1^{div}.

TABLE B.—*Adopted Corrections and Rates of the Sidereal Clock, etc.*—Continued.

Month and Day.	Observer.	Sidereal Hour.	Clock Corrections.	Hourly Rate.
1882. d.		h.	s.	s.
Aug. 20.9	W.	7.34	— 11.864	+ 0.014
21.2	.	14.60	— 11.762	
22.5	W.	22.17	— 11.520	— 0.027
		22.80	— 11.537	
23.9	W.	7.15	— 11.760	— 0.102
		7.57	— 11.803	
24.9	W.	7.40	— 12.256	— 0.009
25.3	.	18.02	— 12.348	
28.3	W.	18.25	— 13.760	+ 0.107
		19.00	— 13.680	
29.3	W.	18.30	— 13.600	— 0.143
		19.00	— 13.700	
Sept. 1.3	W.	18.53	— 14.023	
5.3	W.	18.05	— 16.695	— 0.200
		18.55	— 16.795	
14.9	W.	9.60	— 20.270	0.000
15.1	.	13.84	— 20.272	
15.3	W.	19.57	— 20.437	— 0.013
		23.65	— 20.490	
18.3	W.	18.77	— 20.650	— 0.046
		22.43	— 20.817	
18.9	S.	10.15	— 20.930	— 0.016
19.1	.	13.05	— 20.975	
19.3	S.	17.75	— 21.140	— 0.073
		20.22	— 21.320	
19.9	W.	9.82	— 21.826	— 0.027
20.1	.	13.30	— 21.920	
21.1	S.	13.60	— 22.563	
23.9	W.	9.82	— 24.276	
28.9	W.	9.82	— 24.055	— 0.004
29.1	.	14.02	— 24.073	
29.3	W.	19.90	— 24.170	— 0.002
		23.04	— 24.176	
Oct. 2.9	S.	9.97	— 24.037	— 0.032
3.1	.	14.74	— 24.192	
3.3	S.	19.82	— 24.355	+ 0.005
		22.35	— 24.342	
4.3	W.	19.80	— 24.568	— 0.010
		22.64	— 24.596	
5.3	E.	19.84	— 24.796	0.000
		22.87	— 24.797	
6.3	W.	19.00	— 25.375	— 0.009
		20.33	— 25.387	
7.2	S.	18.88	— 25.808	— 0.020
		22.72	— 25.885	

Month and Day.	Observer.	Sidereal Hour.	Clock Corrections.	Hourly Rate.
1882. d.		h.	s.	s.
Oct. 8.9	W.	12.17	— 26.893	— 0.019
9.1	.	14.58	— 26.938	
13.9	W.	12.25	— 29.865	+ 0.019
14.1	.	14.68	— 29.820	
14.2	W.	19.57	— 29.973	— 0.028
		21.13	— 30.017	
30.4	S.	22.43	— 30.870	— 0.046
		1.68	— 31.018	
31.1	W.	16.38	— 31.372	— 0.030
		0.00	— 31.600	
31.9	W.	13.05	— 31.885	— 0.030
Nov. 1.4	.	22.52	— 32.165	
2.8	W.	9.22	— 32.760	
2.9	W.	12.57	— 32.483	— 0.018
3.1	.	17.64	— 32.576	
5.9	S.	13.77	— 30.507	+ 0.032
6.3	.	22.54	— 30.222	
8.3	W.	22.28	— 29.180	+ 0.015
		1.72	— 29.130	
8.7	W.	7.47	— 29.153	
9.1	W.	18.60	— 28.747	
11.3	S.	22.40	— 28.310	+ 0.022
		23.90	— 28.277	
13.7	W.	7.90	— 29.418	
14.3	S.	22.47	— 29.023	+ 0.023
		0.67	— 28.973	
14.9	W.	13.70	28.588	+ 0.025
15.1	.	17.25	— 28.498	+ 0.013
		19.13	— 28.474	
15.3	W.	23.42	— 28.562	+ 0.060
		2.88	— 28.355	
15.7	W.	7.60	— 28.185	+ 0.041
		9.78	— 28.095	
16.3	S.	22.68	— 27.298	
18.8	W.	10.04	— 25.780	+ 0.027
		12.78	— 25.706	
20.3	S.	22.40	— 17.732	— 0.017
		1.32	— 17.782	
20.7	W.	9.58	— 18.300	+ 0.016
		13.75	— 18.235	
21.3	S.	22.17	— 18.153	— 0.010
		0.35	— 18.175	
21.3	W.	22.90	— 18.368	0.058
		0.53	— 18.463	— 0.021
		9.48	— 18.650	

TABLE B.—*Adopted Corrections and Rates of the Sidereal Clock, etc.*—Continued.

Month and Day.	Observer.	Sidereal Hour.	Clock Corrections.	Hourly Rate.
1882. d.		h.	s.	s.
Nov. 22.7	W.	9.68	— 19.212	+ 0.018
		12.62	— 19.158	
23.3	S.	22.80	— 19.180	+ 0.017
		0.43	— 19.153	
23.3	W.	23.10	— 19.313	— 0.010
		0.35	— 19.325	
23.9	W.	13.83	— 19.720	— 0.040
		20.55	— 19.992	— 0.010
		0.22	— 20.028	
24.3	S.	23.92	— 19.905	
24.7	W.	9.63	— 20.343	— 0.082
		10.20	— 20.390	
25.3	S.	22.70	— 20.520	— 0.048
		0.37	— 20.600	
25.3	W.	23.10	— 20.680	— 0.040
		0.43	— 20.733	
26.9	W.	14.13	— 21.580	— 0.034
27.1	.	18.43	— 21.727	
27.3	S.	23.44	— 21.791	— 0.029
		2.54	— 21.880	
27.3	W.	23.25	— 22.075	+ 0.106
		0.43	— 21.950	
29.7	W.	9.63	— 24.353	— 0.021
		15.07	— 24.467	
30.3	S.	22.80	— 24.612	— 0.019
		2.30	— 24.678	
30.4	W.	0.93	— 24.860	
Dec. 1.4	S.	0.04	— 25.238	— 0.027
		1.68	— 25.282	
2.3	S.	22.67	— 26.050	— 0.015
		1.22	— 26.088	
2.3	W.	23.87	— 26.297	
3.3	S.	23.20	— 26.888	— 0.007
		1.88	— 26.906	
3.3	W.	23.47	— 27.073	
3.9	W.	15.15	— 27.390	

Month and Day.	Observer.	Sidereal Hour.	Clock Corrections.	Hourly Rate.
1882. d.		h.	s.	s.
Dec. 4.3	S.	23.18	— 27.372	+ 0.051
		0.00	— 27.330	
4.7	W.	9.20	— 27.820	— 0.100
		9.75	— 27.875	
5.9	W.	14.33	— 28.840	— 0.052
6.1	.	19.64	— 29.118	
6.3	W.	23.50	— 29.303	— 0.029
		0.67	— 29.337	
7.1	W.	19.42	— 30.425	
7.3	S.	23.43	— 30.223	— 0.016
		0.50	— 30.240	
7.6	W.	8.70	— 30.747	
11.1	W.	20.52	— 32.390	
11.2	S.	23.03	— 32.390	— 0.017
		2.62	— 32.452	
11.6	W.	8.70	— 32.690	— 0.031
11.9	.	15.68	— 32.905	
12.2	S.	22.84	— 32.900	+ 0.008
		1.34	— 32.881	
14.2	S.	23.64	— 34.991	— 0.035
		2.25	— 35.082	
15.9	W.	15.74	— 36.930	
16.2	S.	22.92	— 37.042	— 0.035
		0.98	— 37.115	
18.2	S.	22.90	— 38.767	— 0.066
		23.70	— 38.820	
19.2	S.	22.90	— 39.613	— 0.108
		23.77	— 39.707	
26.2	S.	0.28	— 48.882	— 0.083
		2.33	— 49.053	
28.6	W.	7.57	— 52.573	
30.2	W.	23.22	— 54.882	— 0.054
30.6		7.43	— 55.327	
31.2	W.	23.14	— 56.034	

TABLE C.—*Zenith-Point Corrections derived from observations of the Nadir and Reflected Stars in* 1882.

Mean Day.	Sidereal Hour.	Observer.	Object.	Observed Zenith-Point Correction.	Adopted Zenith-Point Correction.
1882.	h.			′ ″	′ ″
Jan. 11.1	20.5	E.	Nadir . . .	. .	+0 49.86
11.4	4.2	E.	Nadir . . .	. .	+0 52.28
14.5	7.0	W.	Nadir . . .	+0 52.23	+0 52.04
	7.3	.	B. A. C. 2462	53.08	
17.5	8.0	R.	Nadir. . . .	. .	+0 52.78
19.4	4.0	R.	c Persei . . .	+0 52.28	
	4.9	.	Nadir . . .	52.33	+0 51.64
	7.2	.	δ Geminorum .	52.04	
22.9	19.0	E.	Nadir . . .	. .	+0 51.11
23.4	4.6	E.	Nadir . . .	. .	+0 53.28
24.3	3.5	S.	Nadir . . .	. .	+0 53.82
26.9	18.0	E.	Nadir. . . .	. .	+0 53.82
27.4	5.7	E.	Nadir. . . .	. .	+0 51.72
29.9	19.3	W.	Nadir. . . .	. .	+0 51.89
31.9	19.5	S.	Nadir . . .	. .	+0 51.65
Feb 1.3	3.6	S.	Nadir . . .	. .	+0 52.13
1.9	20.2	R.	Nadir . . .	+0 52.41	+0 51.57
2.1	23.5	.	Nadri . . .	50.73	
2.4	7.3	R.	Nadir . . .	+0 52.23	
	8.6	.	γ Cancri . . .	53.07	+0 52.33
	8.9	.	ι Ursæ Majoris	53.41	
3.4	6.8	W.	Anonymous .	+0 53.46	
	7.0	.	Nadir . . .	52.42	+0 52.25
	8.4	.	Nadir . . .	52.10	
5.9	19.5	R.	Nadir . . .	+0 51.84	+0 51.14
	23.3	.	Nadir . . .	50.45	
6.3	4.0	R.	c Persei . . .	+0 58.36	
	5.3	.	Nadir . . .	58.51	+0 57.97
	8.6	.	γ Cancri . . .	58.76	
6.9	(20.0)	W.	Nadir . . .	. .	+0 53.86
9.9	20.3	R.	Nadir . . .	+0 51.91	+0 51.23
10.1	0.0	.	Nadir . . .	50.55	
10.3	5.3	R.	β Tauri . . .	+0 52.31	
	8.6	.	Nadir . . .	52.45	+0 52.22
	10.4	.	9 Draconis . .	52.70	
	11.1	.	Nadir . . .	53.16	
10.7	14.7	R.	ε Bootis . . .	+0 52.50	
10.8	16.1	.	Groom. 2320.	50.09	+0 51.62
	16.5	.	Nadir . . .	51.99	
10.9	20.0	W.	Nadir . . .	. .	+0 53.78
1882.	h.			′ ″	′ ″
Feb. 14.9	20.3	W.	Nadir . . .	+0 47.44	+0 46.22
15.1	23.5	.	Nadir . . .	44.99	
15.4	7.2	W.	Nadir . . .	+0 41.86	+0 42.12
15.5	8.5	.	Nadir . . .	42.37	
16.9	20.0	S.	Nadir . . .	. .	+0 43.63
17.3	5.3	S.	Nadir . . .	. .	+0 45.83
17.9	21.4	W.	Nadir . . .	+0 45.50	+0 44.95
18.1	0.9	.	Nadir . . .	44.40	
23.3	6.6	W.	B. A. C. 2194	+0 49.22	
	6.9	.	Nadir . . .	48.23	+0 48.23
	8.9	.	ι Ursæ Majoris	48.96	
24.4	4.7	R.	α Camelop . .	+0 48.66	
	8.2	.	Nadir . . .	49.04	+0 48.74
	9.6	.	ε Leonis . . .	50.26	
24.9	20.0	S.	Nadir . . .	. .	+0 47.86
25.4	8.2	S.	β Cancri . . .	+0 53.06	+0 51.82
	8.5	.	Nadir . . .	51.82	
26.3	6.9	E.	Nadir . . .	. .	+0 52.61
26.9	22.0	W.	Nadir . . .	+0 50.80	+0 50.50
27.1	0.8	.	Nadir . . .	50.21	
27.4	7.4	R.	α^2 Geminorum .	+0 52.13	
	9.5	.	Nadir . . .	50.64	+0 50.94
	10.4	.	9 Draconis . .	51.77	
Mar. 1.9	21.0	R.	Nadir . . .	+0 49.32	
2.1	0.8	.	Nadir . . .	47.58	+0 47.93
	1.2	.	Polaris . . .	47.40	
2.4	7.4	R.	α^2 Geminorum .	+0 49.89	
	9.1	.	Nadir . . .	48.28	+0 48.20
	10.2	.	32 Ursæ Majoris	48.15	
2.9	22.2	W.	Nadir . . .	+0 47.34	+0 48.10
3.0	0.9	.	Nadir . . .	48.85	
3.3	5.6	W.	Nadir . . .	. .	+0 50.13
4.4	8.8	E.	Nadir . . .	+0 49.42	
	9.0	.	σ^2 Ursæ Majoris	50.04	+0 49.66
	9.6	.	σ Leonis . . .	51.24	
9.9	22.1	R.	Nadir . . .	+0 50.65	+0 50.52
10.1	0.4	.	Nadir . . .	50.38	
11.4	8.9	W.	Nadir . . .	. .	+0 51.54
12.9	21.8	S.	Nadir . . .	. .	+0 49.44
13.4	10.3	S.	Nadir . . .	. .	+0 51.96

TABLE C.—*Zenith-Point Corrections, etc.*—Continued.

Mean Day.	Sidereal hour.	Observer.	Object.	Observed Zenith-Point Correction.	Adopted Zenith-Point Correction.
1882.	h.			′ ″	′ ″
Mar. 14.4	8.4	R.	η Cancri . . .	+0 53.10	
	8.8	.	Nadir . . .	51.99	+0 52.27
	10.9	.	α Ursæ Majoris	53.46	
19.3	8.1	W.	Nadir . . .	. .	+0 52.93
22.9	22.8	W.	Nadir . . .	+0 50.84	+0 50.40
23.1	3.8	.	Nadir . . .	49.96	
23.4	8.9	W.	ι Ursæ Majoris	+0 51.74	+0 51.30
	9.3	.	Nadir . . .	51.36	
24.9	23.4	W.	Nadir . . .	+0 49.71	+0 49.76
25.1	2.4	.	Nadir . . .	49.81	
25.3	7.3	W.	Nadir . . .	+0 50.76	+0 50.85
	8.9	.	ι Ursæ Majoris	51.44	
26.3	8.1	R.	ζ¹ Cancri . . .	+0 53.04	
	8.6	.	Nadir . . .	50.69	+0 51.06
	9.3	.	1 Draconis . .	51.18	
28.4	8.9	E.	ι Ursæ Majoris	+0 49.10	
	9.1	.	Nadir . . .	49.59	+0 49.36*
	9.1	.	Nadir . . .	49.28	+0 49.28
	10.0	.	B. A. C. 3453	51.13	
28.9	0.3	S.	Nadir . . .	. .	+0 49.16
29.3	10.0	S.	B. A. C. 3453	+0 53.42	
	10.9	.	α Ursæ Majoris	51.56	+0 51.55
	11.4	.	Nadir . . .	51.39	
29.9	0.0	R.	Nadir . . .	+0 50.57	+0 50.24
30.1	1.8	.	Nadir . . .	49.90	
30.4	8.9	R.	ι Ursæ Majoris	+0 51.08	
	9.2	.	Nadir . . .	50.37	+0 50.11†
	9.2	.	Nadir . . .	50.74	+0 50.74
	11.7	.	β Leonis . . .	50.62	
30.9	23.5	W.	Nadir . . .	. .	+0 50.06
31.3	8.3	W.	B. A. C. 2819	+0 50.70	+0 50.36
	8.8	.	Nadir . . .	50.52	
Apr. 1.1	2.7	E.	Nadir . . .	. .	+0 50.30
1.4	9.4	E.	Nadir . . .	. .	+0 49.11
7.4	10.9	R.	α Ursæ Majoris	+0 51.16	+0 50.69
	12.3	.	Nadir . . .	50.72	
11.4	11.7	R.	Nadir . . .	. .	+0 52.37
11.9	23.8	W.	Nadir . . .	+0 49.90	+0 49.85
12.1	3.5	.	Nadir . . .	49.80	
12.3	9.3	W.	Nadir . . .	+0 52.18	
	9.9	.	B. A. C. 3415	54.30	+0 52.93
	10.2	.	32 Ursæ Majoris	54.04	
12.9	0.5	R.	Nadir . . .	+0 50.41	+0 50.38
13.1	2.7	.	Nadir . . .	50.34	
1882.	h.			′ ″	′ ″
Apr. 13.4	12.4	R.	B. A. C. 4195	+0 52.52	
	12.7	.	Nadir . . .	51.97	+0 51.66
	13.7	.	η Ursæ Majoris	52.22	
16.9	23.8	E.	Nadir . . .	+0 49.27	+0 48.74
17.1	3.5	.	Nadir . . .	48.22	
17.4	10.0	E.	B. A. C. 3453	+0 52.42	
	10.3	.	Nadir . . .	50.52	+0 50.76
	11.4	.	λ Draconis . .	51.08	
17.9	23.9	W.	Nadir . . .	+0 50.22	+0 49.81
18.1	3.5	.	Nadir . . .	49.40	
18.3	9.9	W.	Nadir . . .	+0 49.60	
	11.5	.	υ Leonis . . .	51.54	+0 49.84
	11.7	.	B. A. C. 3981	50.12	
19.9	23.8	S.	Nadir . . .	. .	+0 48.78
23.9	23.9	W.	Nadir . . .	. .	+0 49.65
24.4	10.2	W.	32 Ursæ Majoris	+0 50.22	
	10.4	.	9 Draconis . .	51.57	+0 51.13
	10.6	.	41 Leonis Min. .	52.78	
	10.8	.	Nadir . . .	52.17	
25.1	4.7	E.	Nadir . . .	. .	+0 48.81
25.4	12.0	E.	Nadir . . .	. .	+0 50.89
26.9	1.5	R.	Nadir . . .	. .	+0 50.82
27.4	10.0	R.	α Leonis . . .	+0 52.79	
	10.9	.	α Ursæ Majoris	51.84	+0 51.46
	12.6	.	Nadir . . .	51.48	
27.9	0.4	W.	Nadir . . .	+0 50.42	+0 50.03
28.1	4.7	.	Nadir . . .	49.64	
30.4	12.0	S.	Nadir . . .	. .	+0 50.83
30.9	0.8	R.	Nadir . . .	+0 49.92	+0 49.24
May 1.1	4.1	.	Nadir . . .	48.57	
1.4	10.9	R.	α Ursæ Majoris	+0 50.12	
	11.8	.	Nadir . . .	49.82	+0 49.80
	14.1	.	δ Bootis . . .	51.18	
2.5	15.5	W.	α Cor. Bor. . .	+0 52.05	
	15.8	.	ζ Ursæ Minoris	52.06	+0 51.54
	16.0	.	Nadir . . .	52.24	
2.9	0.5	E.	Nadir . . .	+0 50.35	+0 49.78
3.1	5.8	.	Nadir . . .	49.22	
3.3	10.9	E.	α Ursæ Majoris	+0 51.55	
	13.4	.	Nadir . . .	51.73	+0 51.50
	14.2	.	α Bootis . . .	52.94	
8.9	0.8	R.	Nadir . . .	+0 51.90	+0 50.58
9.1	5.5	.	Nadir . . .	49.26	

*First nadir for stars observed by E. and R.; second for stars observed by E. alone.

†First nadir for stars observed by R. and E.; second for stars observed by R. alone.

TABLE C.—*Zenith-Point Corrections, etc.*—Continued.

Mean Day.	Sidereal Hour.	Observer.	Object.	Observed Zenith-Point Correction.	Adopted Zenith-Point Correction.
1882.	h.			′ ″	′ ″
May 16.9	1.5	R.	Nadir . . .	+0 49.28	+0 49.75
17.1	6.2	.	Nadir . . .	50.22	
18.4	14.1	W.	Nadir . . .	+0 50.44	+0 50.78
	14.7	.	ε Bootis . . .	52.34	
22.9	1.5	E.	Nadir . . .	+0 48.34	+0 47.70
23.1	7.8	.	Nadir . . .	47.06	
23.5	15.9	E.	Nadir . . .	. .	+0 48.84
23.9	2.2	S.	Nadir . . .	. .	+0 48.56
25.3	11.8	R.	γ Ursæ Majoris	+0 50.50	
	14.7	.	ε Bootis . . .	50.67	+0 49.67
	15.3	.	Nadir . . .	49.56	
25.9	2.3	W.	Nadir . . .	. .	+0 49.87
26.4	12.8	W.	Nadir . . .	+0 51.09	
	13.7	.	η Ursæ Majoris	51.96	+0 51.04
	14.1	.	d Bootis . . .	52.33	
	15.4	.	β Cor. Bor. . .	51.70	
28.9	2.3	R.	Nadir . . .	+0 47.41	
	3.3	.	α Persei . . .	47.26	+0 47.29
29.0	5.3	.	Nadir . . .	47.71	
29.4	13.7	R.	η Ursæ Majoris	+0 48.88	
	15.3	.	Nadir . . .	48.63	+0 48.41
	16.9	.	κ Ophiuchi . .	49.44	
29.9	2.7	W.	Nadir . . .	+0 48.56	
	3.3	.	α Persei . . .	48.00	+0 48.07
30.1	6.0	.	Nadir . . .	48.14	
30.9	2.4	E.	Nadir . . .	+0 47.32	+0 47.38
31.1	7.9	.	Nadir . . .	47.44	
June 1.3	14.0	S.	Nadir . . .	. .	+0 47.94
1.9	3.8	R.	Nadir . . .	+0 48.46	+0 48.00
2.1	6.8	.	Nadir . . .	47.54	
2.4	13.8	R.	B. A. C. 4643	+0 49.19	
	14.7	.	ε Bootis . . .	49.79	+0 49.21
	15.6	.	Nadir . . .	49.35	
	17.9	.	γ Draconis . .	50.73	
4.9	3.9	S.	Nadir . . .	. .	+0 47.88
5.4	14.7	S.	Nadir . . .	. .	+0 50.17
5.9	3.3	R.	α Persei . . .	+0 48.11	+0 48.02
	4.1	.	Nadir . . .	48.42	
6.4	14.1	R.	d Bootis . . .	+0 49.64	
	15.6	.	Nadir . . .	47.49	+0 48.58
	17.9	.	γ Draconis . .	50.34	
7.4	15.4	W.	β Cor. Bor. . .	+0 49.82	+0 48.28
	15.9	.	Nadir . . .	47.96	
7.9	4.4	E.	Nadir . . .	+0 46.13	+0 45.96
8.1	7.3	.	Nadir . . .	45.78	
8.4	15.0	E.	Nadir . . .	. .	+0 48.21
1882.	h.			′ ″	′ ″
June 8.9	3.1	S.	Nadir . . .	. .	+0 46.35
13.4	15.6	S.	Nadir . . .	+0 53.90	+0 53.84
	15.9	.	ε Cor. Bor. . .	55.02	
13.9	4.3	R.	Nadir . . .	+0 52.84	+0 52.90
14.0	7.2	.	Nadir . . .	52.96	
14.9	3.5	W.	Nadir . . .	. .	+0 53.62
16.6	20.0	W.	Nadir . . .	. .	+0 53.31
16.9	4.1	S.	Nadir . . .	. .	+0 51.88
19.4	15.5	W.	α Cor. Bor. . .	+0 53.93	+0 52.28
	16.0	.	Nadir . . .	51.86	
19.9	4.2	E.	Nadir . . .	+0 51.56	+0 51.57
20.1	7.8	.	Nadir . . .	51.58	
20.9	5.5	S.	Nadir . . .	. .	+0 52.40
21.3	13.6	S.	Nadir . . .	+0 52.79	
	14.1	.	d Bootis . . .	53.79	+0 52.72
	14.4	.	θ Bootis . . .	53.30	
21.9	4.1	R.	Nadir . . .	+0 50.26	+0 50.94
	4.5	.	α Tauri . . .	53.36	
22.4	15.5	R.	α Cor. Bor. . .	+0 52.31	
	15.8	.	Nadir . . .	52.06	+0 51.59
	19.4	.	Nadir . . .	51.62	
23.4	14.9	W.	β Ursæ Minoris	+0 51.91	+0 51.32
	15.0	.	Nadir . . .	51.22	
23.9	4.3	E.	Nadir . . .	+0 51.18	+0 50.53
24.1	8.0	.	Nadir . . .	49.88	
26.1	8.1	R.	Nadir . . .	. .	+0 48.66
26.9	4.7	W.	Nadir . . .	+0 50.66	+0 50.20
27.1	7.9	.	Nadir . . .	49.73	
27.4	15.1	W.	Nadir . . .	. .	+0 51.02
29.3	15.2	S.	Nadir . . .	. .	+0 51.66
July 1.5	18.7	W.	Nadir . . .	. .	+0 51.82
2.9	5.4	S.	Nadir . . .	. .	+0 51.83
5.4	15.4	W.	Nadir . . .	+0 53.91	
	15.5	.	α Cor. Bor. . .	54.30	+0 53.15
	18.4	.	B. A. C. 6289	52.98	
5.9	5.4	E.	Nadir . . .	. .	+0 52.90
6.4	16.0	E.	B. A. C. 5348	+0 53.20	
	16.4	.	Nadir . . .	52.59	+0 52.41
	19.4	.	B. A. C. 6690	53.18	
6.9	5.4	S.	Nadir . . .	. .	+0 52.52
9.8	3.5	W.	Nadir . . .	. .	+0 50.90

TABLE C.—*Zenith-Point Corrections, etc.*—Continued.

Mean Day.	Sidereal Hour.	Observer.	Object.	Observed Zenith-Point Correction.	Adopted Zenith-Point Correction.
1882.	h.			′ ″	′ ″
July 9.9	5.0	E.	Nadir . . .	+0 50.16	+0 49.52
10.1	9.9	.	Nadir . . .	48.88	
10.4	16.0	E.	B. A. C. 5348	+0 51.06	
	16.5	.	Nadir . . .	49.90	+0 50.17
	19.4	.	B. A. C. 6690	51.28	
11.4	17.6	S.	Nadir . . .	+0 49.74	
	18.0	.	B. A. C. 6150	51.65	+0 50.51
	19.7	.	δ Cygni . . .	51.86	
11.9	6.3	R.	Nadir . . .	+0 49.11	+0 49.26
12.1	10.4	.	Nadir . . .	49.41	
12.9	6.3	W.	Nadir . . .	. .	+0 49.71
14.9	6.0	S.	Nadir . . .	. .	+0 51.28
15.3	16.1	S.	φ Herculis . .	+0 52.16	+0 51.26
	16.5	.	Nadir . . .	50.87	
20.9	6.4	W.	Nadir . . .	. .	+0 50.41
23.9	7.0	R.	Nadir . . .	+0 51.15	+0 51.14
24.1	10.4	.	Nadir . . .	51.14	
24.4	18.0	R.	B. A. C. 6150	+0 50.78	
	18.3	.	Nadir . . .	49.68	+0 49.70
	20.2	.	κ Cephei . . .	50.36	
24.9	7.4	W.	Nadir . . .	+0 48.92	+0 49.14
25.1	9.8	.	Nadir . . .	49.35	
25.4	17.3	W.	Nadir . . .	+0 51.20	
	17.4	.	B. A. C. 5893	50.46	+0 49.95
	19.8	.	ε Draconis . .	49.92	
27.9	6.8	R.	Nadir . . .	. .	+0 48.61
28.4	17.9	R.	γ Draconis . .	+0 50.65	
	20.2	.	Nadir . . .	50.12	+0 50.04
	21.8	.	16 Pegasi . . .	51.08	
Aug. 4.3	17.1	E.	Nadir . . .	. .	+0 50.62
6.9	7.2	E.	Nadir . . .	. .	+0 49.27
8.5	21.8	W.	Nadir . . .	. .	+0 50.94
10.1	12.7	W.	Nadir . . .	. .	+0 50.88
10.3	17.4	W.	Nadir . . .	+0 51.53	+0 51.81
	18.8	.	B. A. C. 6438	53.32	
10.9	8.0	E.	Nadir . . .	+0 50.86	+0 50.72
11.1	11.8	.	Nadir . . .	50.57	
11.4	19.0	E.	Nadir . . .	+0 51.33	+0 51.69
	19.5	.	Anonymous .	52.55	
14.4	18.9	W.	Nadir . . .	+0 50.62	+0 50.35
	22.6	.	B. A. C. 7923	51.31	
15.9	7.4	E.	Nadir . . .	. .	+0 49.24
16.4	19.4	E.	Nadir . . .	. .	+0 50.10
1882.	h.			′ ″	′ ″
Aug. 17.4	19.1	W.	Nadir . . .	. .	+0 49.71
18.5	23.1	W.	Nadir . . .	. .	+0 50.67
20.4	19.3	W.	Nadir . . .	. .	+0 51.42
20.9	7.4	W.	Nadir . . .	. .	+0 51.36
21.2	15.3	W.	Nadir . . .	. .	+0 50.41
22.5	22.8	W.	Nadir . . .	. .	+0 51.50
23.9	7.4	W.	Nadir . . .	. .	+0 51.07
24.9	7.4	W.	Nadir . . .	. .	+0 50.19
25.3	18.4	W.	Nadir . . .	. .	+0 51.12
28.4	19.4	W.	Nadir . . .	. .	+0 52.76
29.4	19.4	W.	Nadir . . .	. .	+0 52.46
Sept. 1.4	19.5	W.	Nadir . . .	. .	+0 52.05
5.3	19.1	W.	Nadir . . .	. .	+0 51.48
14.9	10.5	W.	Nadir . . .	+0 52.18	+0 51.52
15.1	14.0	.	Nadir . . .	50.87	
15.4	20.3	W.	B. A. C. 7029	+0 53.26	
	20.6	.	α Cygni . . .	52.77	+0 52.00
	21.0	.	Nadir . . .	51.68	
18.3	20.1	W.	o Cygni . . .	+0 54.22	
	20.3	.	B. A. C. 7029	52.59	+0 52.49
	20.5	.	Nadir . . .	52.40	
19.1	14.3	S.	Nadir . . .	. .	+0 50.17
19.4	. .	S.	Nadir . . .	. .	+0 51.21
19.9	10.6	W.	Nadir . . .	+0 51.07	+0 50.74
20.0	12.5	.	Nadir . . .	50.41	
20.9	11.5	S.	Nadir . . .	. .	+0 51.75
23.9	10.5	W.	Nadir . . .	. .	+0 55.27
28.9	10.4	W.	Nadir . . .	+0 55.01	+0 54.73
29.1	15.0	.	Nadir . . .	54.45	
29.4	20.6	W.	α Cygni . . .	+0 55.46	
	21.6	.	ε Pegasi . . .	57.20	+0 55.24
	21.8	.	Nadir . . .	54.78	
Oct. 3.0	13.5	S.	Nadir . . .	. .	+0 54.42
3.4	20.0	S.	Nadir . . .	+0 53.98	
	20.7	.	ε Cygni . . .	55.35	+0 54.43
	21.3	.	α Cephei . . .	55.68	
4.4	20.6	W.	α Cygni . . .	+0 55.08	
	20.8	.	B. A. C. 7256	55.60	+0 54.54
	21.5	.	Nadir . . .	54.66	

TABLE C.—*Zenith-Point Corrections, etc.*—Continued.

Mean Day.	Sidereal Hour.	Observer.	Object.	Observed Zenith-Point Correction.	Adopted Zenith-Point Correction.
1882.	h.			′ ″	′ ″
Oct. 5.4	20.6	E.	α Cygni . . .	+0 54.42	
	20.8	.	B. A. C. 7256	56.13	+0 54.43
	20.9	.	Nadir . . .	54.47	
6.4	20.6	W.	α Cygni . . .	+0 54.16	
	20.8	.	B. A. C. 7256	55.21	+0 53.83
	21.0	.	Nadir . . .	53.85	
7.4	20.3	S.	B. A. C. 7029	+0 56.88	
	20.6	.	α Cygni . . .	56.18	+0 55.32
	20.8	.	Nadir . . .	54.64	
9.1	15.5	W.	Nadir . . .	. .	+0 54.75
14.1	15.7	W.	Nadir . . .	. .	+0 54.64
14.3	20.1	W.	Nadir . . .	+0 55.31	
	21.5	.	β Cephei . . .	55.64	+0 55.55
	21.6	.	ε Pegasi . . .	57.44	
30.4	0.4	S.	B. A. C. 126	+0 56.00	
	0.9	.	Nadir . . .	55.10	+0 55.30
31.1	17.4	W.	Nadir . . .	. .	+0 54.81
31.4	0.3	W.	Nadir . . .	+0 56.13	
	0.6	.	α Cassiopeæ .	56.26	+0 55.94
31.9	13.6	W.	Nadir . . .	. .	+0 54.52
Nov. 1.3	23.4	W.	Nadir . . .	. .	+0 54.27
2.8	10.2	W.	Nadir . . .	. .	+0 57.70
2.9	14.3	W.	Nadir . . .	+0 57.38	
3.1	18.2	.	Nadir . . .	56.19	+0 56.78
5.9	14.0	S.	Nadir . . .	. .	+0 56.17
6.4	23.9	S.	Nadir . . .	. .	+0 56.17
8.4	23.9	W.	ω Piscium . .	+0 58.05	
	0.4	.	Nadir . . .	56.60	+0 56.71
8.7	8.2	W.	Nadir . . .	. .	+0 56.71
9.1	17.6	W.	Nadir . . .	. .	+0 56.26
11.4	0.4	S.	Nadir . . .	. .	+0 56.09
13.8	. .	W.	. . . . .	. .	+0 58.65*
14.4	23.9	S.	ω Piscium . .	+0 57.98	
	0.3	.	B. A. C. 79 .	57.27	+0 56.28
	0.5	.	Nadir . . .	55.31	
14.9	14.6	W.	Nadir . . .	. .	+0 56.12
15.2	20.3	W.	Nadir . . .	+0 56.51	
15.4	0.3	.	B. A. C. 79 .	54.68	
	0.6	.	B. A. C. 166 .	56.33	+0 55.42
	0.8	.	Nadir . . .	55.27	
	3.3	.	α Persei . . .	56.52	
15.8	10.6	W.	Nadir . . .	. .	+0 56.35
1882.	h.			′ ″	′ ″
Nov. 16.3	23.8	S.	Nadir . . .	. .	+0 56.59
18.8	10.1	W.	Nadir . . .	+0 56.12	
	10.2	.	32 Ursæ Majoris	56.90	+0 56.26
20.4	0.6	S.	o Cassiopeæ . .	+0 57.73	
	1.0	.	Nadir . . .	56.64	+0 56.94
20.7	10.2	W.	32 Ursæ Majoris	+0 57.50	
	10.7	.	Nadir . . .	56.95	+0 56.98
21.4	0.3	S.	B. A. C. 79 .	+0 56.53	
	0.6	S.	α Cassiopeæ . .	55.54	+0 55.72
	1.6	S.	Nadir . . .	55.92	
	1.8	W.	Nadir . . .	55.89	
21.8	10.6	W.	Nadir . . .	. .	+0 56.80
22.7	10.2	W.	32 Ursæ Majoris	+0 57.46	
	10.4	.	ρ Leonis . . .	57.81	+0 56.32
	10.8	.	Nadir . . .	55.43	
23.4	0.3	S.	B. A. C. 79 .	+0 56.82	
	0.6	W.	B. A. C. 166 .	57.46	+0 56.26
	0.7	S.	Nadir . . .	56.30	
	0.9	W.	Nadir . . .	56.18	
24.2	21.1	W.	Nadir . . .	+0 56.47	
	23.8	.	Groom. 4163	58.46	+0 56.79
	0.6	.	B. A. C. 166 .	57.16	
	0.9	.	Nadir . . .	56.79	
24.4	0.3	S.	B. A. C. 79 .	+0 57.20	
	0.7	.	Nadir . . .	56.97	+0 56.84
24.8	10.7	W.	Nadir . . .	. .	+0 57.98
25.3	22.3	S.	Nadir . . .	+0 56.94	
	0.6	.	o Cassiopeæ .	57.06	+0 56.75
25.3	23.8	W.	Nadir . . .	+0 56.66	
	0.3	.	B. A. C. 79 .	56.39	+0 56.28
27.2	20.8	W.	Nadir . . .	+0 56.35	
	23.8	.	Groom. 4163	56.82	+0 56.40
	0.9	.	Nadir . . .	56.52	
27.3	0.6	S.	B. A. C. 166 .	+0 57.39	
	0.8	.	Nadir . . .	56.57	+0 56.36
29.7	10.2	W.	Nadir . . .	. .	+0 56.41
30.0	16.7	W.	Nadir . . .	. .	+0 54.88
30.4	1.9	S.	Nadir . . .	+0 56.90	
	2.3	W.	Nadir . . .	56.80	+0 56.85
Dec. 2.3	23.7	S.	Nadir . . .	+0 56.04	
	23.8	W.	Nadir . . .	56.52	+0 56.28
3.2	22.0	S.	Nadir . . .	. .	+0 55.36
3.2	23.7	W.	Nadir . . .	. .	+0 56.01
3.9	16.1	W.	Nadir . . .	. .	+0 55.50

* From stars.

TABLE C.—*Zenith-Point Corrections, etc.*—Continued.

Mean Day.	Sidereal Hour.	Observer.	Object.	Observed Zenith-Point Correction.	Adopted Zenith-Point Correction.	Mean Day.	Sidereal Hour.	Observer.	Object.	Observed Zenith-Point Correction.	Adopted Zenith-Point Correction.
1882.	h.			′ ″	′ ″	1882.	h.			′ ″	′ ″
Dec. 4.3	22.3	S.	Nadir . . .	. .	+0 55.78	Dec. 12.3	23.8	S.	Nadir . . .	. .	+0 56.64
4.7	9.3	W.	Nadir . . .	. .	+0 56.41	14.3	23.8	S.	Nadir . . .	. .	+0 57.28
5.9	16.2	W.	Nadir . . .	. .	+0 55.95	15.9	16.7	W.	Nadir . . .	. .	+0 56.87
6.2	20.9	W.	Nadir . . .	+0 55.54		16.3	23.7	S.	Nadir . . .	. .	+0 56.94
	23.8	.	Groom. 4163	55.99	+0 55.67						
	0.4	.	Nadir . . .	55.97		18.3	23.8	S.	Nadir . . .	. .	+0 57.16
7.2	21.8	W.	Nadir . . .	. .	+0 56.58	19.3	23.8	S.	Nadir . . .	. ,	+0 56.40
7.4	. .	S.	. . . . .	. .	+0 57.52*	28.6	8.0	W.	Nadir . . .	. .	+0 59.04
7.7	9.6	W.	Nadir . . .	. .	+0 55.87	30.2	0.2	W.	Nadir . . .	. .	+0 58.15
11.3	23.8	S.	Nadir . . .	. .	+0 56.72						
11.7	9.2	W.	Nadir . . .	. .	+0 56.67	30.6	8.8	W.	Nadir . . .	. .	+0 59.31
11.9	16.9	W.	Nadir . . .	. .	+0 56.04	31.2	0.1	W.	Nadir . . .	. .	+0 58.35

*From stars.

THE XXVI-INCH EQUATORIAL.

The observations on this instrument during the year 1882 were made by Professors A. HALL and E. FRISBY. These observations are printed on pages 95 to 103. The results will be found given on pages 107 to 113.

The manner of making the observations and of printing them is the same as in preceding years, and the work will be understood from the headings of the columns. In observing the conjunctions of the satellites of Saturn, given on page 109, the wire of the micrometer was set perpendicular to the major axis of the ring by means of the angle of position, American Ephemeris, page 479, and the time was observed when the satellite was bisected by the wire. The satellite was watched for several minutes before and after the conjunction.

During the autumn of this year Professor HALL was absent two months on an expedition for observing the transit of Venus.

OBSERVATIONS

WITH THE

TRANSIT CIRCLE.

1882.

SUMMARY OF THE PRINCIPAL CONSTANTS USED IN REDUCING OBSERVATIONS MADE WITH THE TRANSIT CIRCLE IN 1882.

Approximate equatorial interval between any two vertical threads from I to VII 12¼ˢ
One revolution of microscope micrometers . . . . . 30″
One revolution of the zenith-distance micrometer . . . . . 15″.312
One revolution of the right-ascension micrometer 1ˢ.024

Corrections for Inclination and Distance of the Declination Threads.

From January 10 to December 31.				
Vertical Thread.	Correction for Inclination of Double Threads.	Correction for Thread A.	Correction for Thread B.	Correction for Thread *b*.
	″	′ ″	′ ″	′ ″
I	− 0.29	− 2 31.49	+ 2 33.99	+ 2 53.49
II	− 0.19	31.53	33.92	53.71
III	− 0.09	31.58	33.84	53.94
IV	0.00	31.62	33.77	54.16
V	+ 0.09	31.66	33.70	54.38
VI	+ 0.19	31.71	33.62	54.61
VII	+ 0.29	− 2 31.75	+ 2 33.55	+ 2 54.83

Constant { added to reduction to meridian . . . . / subtracted from zenith-point correction } . . . . . 1″.80
Adopted latitude of the Transit Circle . . . . . +38° 53′ 38″.80
One division of the hanging level 0ˢ.058
Position of the instrument . . . . . Clamp West.

Circle B, on the east end of the axis, was used this year in observing; the reading of its horizontal microscope being 49° 4′ when the telescope was pointed to the zenith.

In reversing the instrument the notation of the vertical threads is also reversed, so that the first thread reached by an equatorial star is always called thread I.

DATE. AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
January 11, E.	1	γ^2 Ceti		9	36 53.79	− 0.11	+ **19.12**	36 4 12.70	+ 4 23.78	+ 43.5	2 37 12.87	. .	87 15 41.2	− 2.0
	2	B. A. C. 923		8	51 45.91	+ 0.14	+ 19.19	74 38 8.92	+ 3 16.32	+ 3 35.0	2 52 5.24	− 1.39	125 51 21.4	−10.7
	3	α Ceti		9	55 49.30	− 0.11	+ **19.22**	35 12 9.45	+ 3 10.44	+ 42.2	2 56 8.38	. .	86 22 23.3	− 2.8
	4	ζ Arietis		9	7 50.18	− 0.22	+ **19.23**	18 14 4.82	+ 2 43.90	+ 19.8	3 8 9.15	. .	69 23 29.7	− 2.7
	5	α Persei		9	15 38.31	− 0.52	+ **19.20**	349 24 5.58	+ 3 6.60	− 11.2	3 15 56.98	. .	40 33 22.2	− 1.0
	6	O. Arg. N. 3875		9	24 24.92	− 0.62	+ 19.19	344 16 8.22	+ 3 9.49	− 10.8	3 24 43.49	− 3.08	35 25.22.1	+13.9
	7	δ Persei		9	34 15.79	− 0.49	+ **19.19**	351 26 7.58	+ 2 54.84	− 9.0	3 34 34.50	. .	42 35 14.6	− 2.3
	8	η Tauri		9	40 11.50	− 0.24	+ **19.22**	15 6 6.15	+ 2 48.74	+ 16.2	3 40 30.46	. .	66 15 32.3	− 2.3
	9	ζ Persei		9	46 26.46	− 0.31	+ **19.24**	7 18 9.92	+ 3 18.74	+ 7.8	3 46 45.35	. .	58 27 57.7	− 1.0
	10	γ^1 Eridani		9	52 14.20	− 0.01	+ **19.14**	52 40 10.88	+ 2 57.32	+ 1 18.8	3 52 33.39	. .	103 50 48.2	− 0.7
14, W.	11	α Columbæ		9	35 4.69	+ 0.13	+ **20.03**	72 53 57.18	+ 4 51.86	+ 3 17.5	5 35 24.95	. .	124 8 27.7	− 0.2
	12	α Orionis		9	48 29.43	− 0.10	+ **20.13**	31 25 59.80	+ 4 4.27	+ 37.5	5 48 49.46	. .	82 37 2.8	− 1.7
	13	χ^3 Orionis		9	56 10.84	− 0.17	+ 20.13	19 8 1.95	+ 3 49.79	+ 21.3	5 56 30.80	− 2.63	70 18 34.2	− 4.4
	14	δ Ursæ Min., S. P.		8	9 30.25	+ 5.29	+ 20.13	305 27 59.85	+ 3 37.15	− 1 25.5	6 9 55.67	. .	356 36 32.7	+ 0.6
	15	μ Geminorum		9	15 32.03	− 0.19	+ **20.22**	16 16 1.20	+ 3 2.77	+ 17.9	6 15 51.97	. .	67 25 43.1	− 0.5
	16	O. Arg. S. 5133		9	22 8.08	+ 0.07	+ 20.13	64 34 3.58	+ 4 17.35	+ 2 8.4	6 22 28.28	− 2.34	115 46 50.5	−10.5
	17	B. A. C. 2147		3	27 56.12	+ 0.11	+ 20.13	70 43 57.78	+ 3 35.73	+ 2 54.1	6 28 16.36	− 2.38	121 56 48.8	−10.8
	18	B. A. C. 2202		5	37 5.43	+ 0.17	+ 20.13	78 58 4.20	+ 4 55.24	+ 5 7.5	6 37 25.73	− 2.48	130 14 28.1	−10.9
	19	51 Cephei		5	45 10.29	− 6.56	+ 20.13	311 38 5.45	+ 3 4.24	− 1 8.6	6 45 23.86	. .	2 46 22.3	− 1.6
	20	B. A. C. 2462 (R)		.	. . . .	. .	. .	149 36 2.35	+ 2 17.03	− 35.9	. . . .	. .	81 28 37.7	− 9.6
	21	B. A. C. 2462		.	. . . .	. .	. .	30 18 2.78	+ 3 34.54	+ 35.9	7 20.8	. .	81 28 34.4	− 9.6
17, R.	22	ν Orionis		9	0 31.38	− 0.12	+ **21.43**	24 1 54.50	+ 4 28.70	+ 27.6	6 0 52.69	. .	75 13 12.0	− 1.3
	23	δ Ursæ Min., S. P.		5	9 28.26	+ 5.49	+ 21.43	305 27 54.68	+ 3 42.55	− 1 26.2	18 9 55.18	. .	356 36 32.2	+ 1.0
	24	γ Geminorum		9	30 34.98	− 0.13	+ **21.51**	22 19 58.70	+ 3 25.95	+ 25.4	6 30 56.28	. .	73 30 11.2	− 0.6
	25	α Canis Majoris		9	39 37.83	+ 0.06	+ **21.36**	55 22 2.38	+ 3 37.54	+ 1 29.4	6 39 59.32	. .	106 33 30.5	− 0.6
	26	51 Cephei		8	45 8.40	− 6.74	+ 21.43	311 37 55.20	+ 3 16.74	− 1 9.3	6 45 23.09	. .	2 46 23.8	+ 0.8
	27	δ Canis Majoris		9	3 16.50	+ 0.11	+ **21.45**	64 59 57.62	+ 4 2.56	+ 2 12.2	7 3 38.04	. .	116 12 33.6	− 1.5
	28	δ Geminorum		9	12 46.05	− 0 16	+ **21.42**	16 37 57.38	+ 3 37.08	+ 18.5	7 13 7.32	. .	67 48 14.2	− 0.9
19, R.	29	β Ursæ Min., S. P.		9	50 38.46	+ 0.86	+ 22.20	293 29 57.28	+ 3 51.23	− 2 17.9	14 51 1.52	. .	344 37 51.8	− 1.2
	30	Jupiter I, S		6	56 20.13	− 0.30	+ 22.20	23 0 3.25	+ 3 23.74	+ 25.8	2 56 42.03	+ 1.55	74 10 14.0	. .
	31	Jupiter II, N		5	56 23.24	− 0.30	+ 22.20	23 0 3.25	+ 2 42.29	+ 25.7	2 56 45.14	− 1.56	74 9 32.4	. .
	32	48 Cephei		9	5 8.64	− 1.46	+ 22.21	321 31 59.40	+ 4 9.26	− 47.9	3 5 29.39	. .	12 41 42.0	− 1.9
	33	α Persei		9	15 35.12	− 0.54	+ 22.22	349 23 58.58	+ 3 12.27	− 11.3	3 15 56.80	. .	40 33 20.7	− 2.1
	34	O. Arg. N. 3875		9	24 21.67	− 0.60	+ 22.22	344 16 0.35	+ 3 17.16	− 17.0	3 24 43.29	− 2.95	35 25 21.7	+14.5
	35	ε Eridani		9	27 1.91	− 0.19	+ **22.21**	48 40 7.02	+ 3 56.43	+ 1 9.0	3 27 23.95	. .	99 51 33.6	− 2.0
	36	B. A. C. 1122		3	32 15.29	− 0.07	+ 22.23	75 26 1.38	+ 4 50.83	+ 3 50.8	3 32 37.45	− 1.50	126 41 4.2	−12.5
	37	η Tauri		9	40 8.46	− 0.34	+ **22.28**	15 6 2.78	+ 2 52.09	+ 16.4	3 40 30.36	. .	66 15 32.5	− 2.2
	38	ζ Persei		9	46 23.43	− 0.38	+ **22.25**	7 17 59.52	+ 3 28.84	+ 7.8	3 46 45.29	. .	58 27 57.4	− 1.3
	39	B. A. C. 1227		9	49 54.68	− 0.04	+ 22.24	79 25 59.38	+ 4 54.58	+ 5 17.9	3 50 16.88	− 1.59	130 42 33.1	−13.5
	40	c Persei (R)		.	. . . .	. .	. .	188 26 5.22	+ 4 2.37	+ 9.1	. . . .	. .	42 36 4.5	+10.3
	41	c Persei		.	. . . .	. .	. .	351 26 2.55	+ 3 48.48	− 9.1	3 59.9	. .	42 36 3.1	+10.3
	42	B. A. C. 1372		9	19 15.86	− 0.08	+ 22.27	73 3 57.85	+ 4 5.27	+ 3 17.9	4 19 38.05	− 1.79	124 17 42.2	−12.6
	43	B. A. C. 1389		7	22 18.47	− 0.04	+ 22.27	79 32 5.48	+ 4 9.65	+ 5 20.8	4 22 40.70	− 1.80	130 47 57.1	−13.8
	44	Weisse (2) 650		9	30 58.49	− 0.32	+ 22.28	18 22 4.12	+ 4 25.07	+ 20.2	4 31 20.45	− 2.36	69 33 10.6	+ 0.9
	45	Weisse 777	8.7	8	36 35.17	− 0.23	+ 22.28	37 55 59.60	+ 3 54.27	+ 47.4	4 36 57.22	− 2.11	89 7 2.5	− 4.7
	46	B. A. C. 1633		9	9 58.33	− 0.07	+ 22.31	74 52 3.62	+ 4 51.22	+ 3 42.7	5 10 20.57	− 2.06	126 6 58.7	−13.1
	47	β Tauri		9	18 30.80	− 0.37	+ **22.27**	10 17 59.58	+ 5 3.88	+ 11.1	5 18 52.75	. .	61 29 35.8	− 1.9
	48	B. A. C. 1718		9	23 7.04	− 0.09	+ 22.32	71 18 1.28	+ 3 42.46	+ 2 58.6	5 23 29.27	− 2.13	122 31 3.5	−12.6
	49	B. A. C. 1756		9	28 32.90	− 0.06	+ 22.33	77 19 59.80	+ 5 12.13	+ 4 26.9	5 28 55.17	− 2.16	128 36 0.0	−13.3
	50	α Columbæ		9	34 2.54	− 0.08	+ **22.35**	72 56 0.62	+ 2 49.66	+ 3 16.5	5 34 24.79	. .	124 8 28.0	− 1.1

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
1	30.20	42.5	42.0
10	30.25	41.8	39.5
11	30.10	31.0	28.6
19	30.07	30.4	27.7
22	30.27	30.4	27.3
26	30.29	29.4	26.7
28	30.31	29.3	26.4
32	30.24	37.4	35.4
42	30.24	36.6	34.2
45	30.25	36.1	34.4

For summary of the constants of reduction see page 3.

14, 19, 28 Three bisections.

15, 22, 23, 24, 25, 27, 29, 32, 44, 50. } Four bisections.

26. Five bisections.

ZENITH-POINT CORR.

	″
1 to 10	+ 52.28
11 to 21	+ 52.04
22 to 28	+ 52.78
29 to 50	+ 51.64

28. Barometer and thermometers read at 7^h 35^m

42. Barometer and thermometers read at 4^h 7^m

No.	Parallax. ′ ″	Semi-diam. ′ ″	Def. Illum. ″	Sum. ′ ″
30	− 0.7	− 20.8	.	− 21.5
31	− 0.7	+ 20.8	.	+ 20.1

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
January 19, R.	1	B. A. C. 1848.		9	43 12.74	− 0.36	+ 22.34	10 53 56.08	+ 3 39.04	+ 11.8	5 43 34.72	− 2.80	62 4 8.1	− 2.0
	2	Mars I, S		6	51 27.90	− 0.36	+ 22.35	11 42 4.38	+ 4 40.83	+ 12.7	5 51 49.89	+ 0.65	62 53 19.1	. .
	3	Mars II, N		5	51 29.17	− 0.36	+ 22.35	11 42 4.38	+ 4 24.14	+ 12.7	5 51 51.16	− 0.62	62 53 2.4	. .
	4	ν Orionis		9	0 30.59	− 0.29	+ **22.39**	24 2 1.70	+ 4 20.99	+ 27.3	6 0 52.65	. .	75 13 11.2	− 2.2
	5	δ Ursæ Min., S. P.		9	9 28.46	+ 4.62	+ 22.36	305 27 58.28	+ 3 34.19	− 1 25.2	18 9 55.44	. .	356 36 28.5	− 2.0
	6	γ Geminorum		9	30 34.33	− 0.30	+ **22.33**	22 20 0.35	+ 3 22.56	+ 25.1	6 30 56.41	. .	73 30 9.2	− 2.7
	7	α Canis Majoris		9	39 37.06	− 0.16	+ **22.35**	55 22 5.08	+ 3 36.06	+ 1 28.3	6 39 59.29	. .	106 33 30.6	− 0.9
	8	51 Cephei		9	45 6.80	− 6.06	+ 22.39	311 38 1.58	+ 3 5.80	− 1 8.4	6 45 23.13	. .	2 46 20.2	− 2.2
	9	ε Canis Majoris		5	53 39.42	− 0.11	+ **22.46**	67 36 1.90	+ 4 4.08	+ 2 27.5	6 54 1.71	. .	118 48 54.7	+ 1.9
	10	δ Canis Majoris		5	3 15.78	− 0.12	+ **22.40**	65 0 1.00	+ 4 1.03	+ 2 10.5	7 3 38.07	. .	116 12 33.7	− 1.9
	11	δ Geminorum (R)			. . .	. .	. .	163 16 1.48	+ 2 23.82	− 18.3	. . . .	. .	67 48 14.2	− 0.9
	12	δ Geminorum			. . .	. .	. .	16 38 2.42	+ 3 30.93	+ 18.3	7 13.1	. .	67 48 12.9	− 2.2
22, E.,	13	β Draconis.		9	27 21.57	− 0.47	+ 23.87	346 26 2.15	+ 4 38.10	− 15.1	17 27 44.97	. .	37 36 46.3	− 2.9
	14	α Ophiuchi.		9	29 3.84	− 0.22	+ **23.87**	26 10 4.28	+ 4 17.13	+ 31.0	17 29 27.49	. .	77 21 13.6	− 1.8
	15	μ^1 Herculis.		9	41 26.62	− 0.29	+ **23.87**	11 2 3.55	+ 4 0.71	+ 12.3	17 41 50.20	. .	62 12 37.8	− 2.7
	16	γ Draconis.		9	53 27.40	− 0.46	+ 23.87	347 20 1.38	+ 3 47.47	− 14.1	17 53 50.81	. .	38 29 55.9	− 0.2
23	17	Sun I		9	22 24.16	− 0.08	+ 23.91	58 8 . .	. .	. .	20 22 47.99	+69.30	109 21	. .
	18	Sun II		9	24 42.76	− 0.08	+ 23.91	58 8 . .	. .	. .	20 25 6.59	−69.30	109 21	. .
	19	ε Pegasi		9	37 59.66	− 0.20	+ **23.98**	29 29 58.38	+ 2 53.45	+ 35.2	21 38 23.38	. .	80 39 48.2	− 1.7
	20	α Aquarii		8	59 19.72	− 0.16	+ **23.90**	39 42 . .	. .	. .	21 59 43.49	. .	90 53	. .
	21	ζ Pegasi		9	35 11.10	− 0.21	+ **23.93**	28 35 58.92	+ 4 1.99	+ 33.9	22 35 34.83	. .	79 46 56.0	− 0.8
	22	α Piscis Aust.		9	50 43.96	− 0.03	+ 23.94	69 1 59.40	+ 3 50.24	+ 2 41.2	22 51 7.87	. .	120 14 52.0	+ 0.1
	23	α Pegasi		9	58 29.59	− 0.22	+ **23.92**	24 15 57.62	+ 2 51.43	+ 28.0	22 58 53.31	. .	75 25 38.2	+ 0.1
	24	Moon I, S.		9	59 35.77	− 0.18	+ 23.94	34 30 7.25	+ 3 10.09	+ 42.7	23 59 59.53	+67.99	85 40 21.2	. .
	25	Neptune		9	47 3.44	− 0.16	+ 24.04	24 32 7.10	+ 4 19.10	+ 28.8	2 47 27.32	. .	75 43 16.2	. .
	26	B. A. C. 924		9	51 50.61	+ 0.01	+ 24.04	69 8 8.52	+ 2 42.87	+ 2 44.0	2 52 14.66	− 1.23	120 19 56.6	−10.4
	27	Jupiter I, N		6	56 54.78	− 0.17	+ 24.05	22 56 9.15	+ 2 48.84	+ 26.6	2 57 18.66	+ 1.54	74 5 45.8	. .
	28	Jupiter II, S.		5	56 57.86	− 0.17	+ 24.05	22 56 9.15	+ 3 29.11	+ 26.7	2 57 21.74	− 1.54	74 6 26.2	. .
	29	B. A. C. 997		9	6 40.84	0.00	+ 24.06	68 14 10.58	+ 4 8.52	+ 2 37.0	3 7 4.90	− 1.32	119 27 17.3	−10.6
	30	ζ Arietis		9	7 45.12	− 0.19	+ **24.12**	18 14 10.90	+ 2 37.64	+ 20.8	3 8 8.99	. .	69 23 30.5	− 2.3
	31	γ^2 Ursæ Min., S. P.		9	20 28.98	+ 0.48	+ 24.08	291 8 7.95	+ 3 4.51	− 2 41.2	15 20 53.54	. .	342 14 52.5	+ 0.1
	32	B. A. C. 1122		9	32 13.53	+ 0.04	+ 24.09	75 26 8.85	+ 4 36.01	+ 4 0.0	3 32 37.66	− 1.42	126 41 6.1	−12.9
	33	η Tauri.		9	40 6.46	− 0.20	+ **24.09**	15 6 10.98	+ 2 43.24	+ 17.1	3 40 30.36	. .	66 15 32.5	− 2.3
	34	ζ Persei		9	46 21.41	− 0.24	+ **24.08**	7 18 12.68	+ 3 14.99	+ 8.1	3 46 45.27	. .	58 27 57.0	− 1.7
	35	γ^1 Eridani		9	52 9.17	− 0.06	+ **24.08**	52 40 15.52	+ 2 49.37	+ 1 22.7	3 52 33.22	. .	103 50 48.8	− 1.5
	36	B. A. C. 1276		5	6 20.57	− 1.28	+ 24.12	318 18 6.55	+ 3 51.74	− 56.1	4 6 43.41	− 8.88	9 27 23.4	+16.8
	37	Weisse (2) 248		9	13 11.94	− 0.18	+ 24.13	20 22 9.88	+ 3 32.04	+ 23.5	4 13 35.89	− 2.19	71 32 26.6	+ 1.3
	38	Weisse (2) 421		6	20 3.53	− 0.23	+ 24.14	8 44 8.08	+ 3 21.80	+ 9.8	4 20 27.44	− 2.44	59 54 0.9	+ 4.4
	39	Weisse (2) 422		5	20 4.31	− 0.23	+ 24.14	8 44 8.08	+ 3 9.70	+ 9.8	4 20 28.22	− 2.44	59 53 48.8	+ 4.4
	40	Weisse (2) 1421^1.		6	1 59.20	− 0.22	+ 24.18	10 56 6.20	+ 4 32.19	+ 12.3	5 2 23.16	− 2.60	62 7 11.9	+ 1.0
	41	Weisse (2) 1421^2.		4	1 59.65	− 0.22	+ 24.18	10 56 6.20	+ 4 21.33	+ 12.3	5 2 23.61	− 2.60	62 7 1.0	+ 1.0
	42	Weisse (2) 245		6	10 35.85	− 0.25	+ 24.19	5 26 . .	. .	. .	5 10 59.79	− 2.78	56 36.2	. .
	43	Weisse (2) 247		5	10 36.23	− 0.25	+ 24.19	5 26 . .	. .	. .	5 11 0.17	− 2.78	56 36.0	. .
	44	B. A. C. 1661		6	15 31.51	− 0.12	+ 24.20	35 22 8.75	+ 3 32.21	+ 45.1	5 15 55.59	− 2.26	86 32 47.3	− 5.9
	45	Weisse 342		8	16 16.14	− 0.12	+ 24.20	35 22 8.75	+ 5 2.00	+ 45.1	5 16 40.22	− 2.27	86 34 17.1	− 6.0
	46	Weisse 619		9	26 21.37	− 0.11	+ 24.21	40 30 13.70	+ 3 18.68	+ 54.3	5 26 45.47	− 2.25	91 40 47.9	− 7.5
	47	Lalande 10527	6	6	28 53.10	− 0.09	+ 24.21	44 52 11.52	+ 5 50.36	+ 1 3.3	5 29 17.22	− 2.22	96 5 26.4	− 8.6
	48	B. A. C. 1752	7	5	28 54.76	− 0.09	+ 24.21	44 52 11.52	+ 5 24.37	+ 1 3.3	5 29 18.88	− 2.22	96 5 0.4	− 8.6
	49	Lalande 11061		9	43 36.57	− 0.13	+ 24.23	34 26 5.20	+ 3 38.82	+ 43.6	5 44 0.67	− 2.38	85 36 48.8	− 6.9
	50	Mars I, N.		6	48 40.17	− 0.22	+ 24.23	11 46 6.38	+ 3 53.51	+ 13.3	5 49 4.18	+ 0.55	62 56 34.4	. .

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
1	30.27	35.3	33.2
12	30.28	34.4	32.3
15	30.41	22.0	20.0
18	30.37	25.1	23.8
23	30.37	28.3	26.0
24	30.38	27.8	25.8
28	30.45	23.5	21.3

For summary of the constants of reduction see page 3.

44, 45, 47, 48. One bisection.
4, 5, 10. Four bisections.
8, 24. Five bisections.

ZENITH-POINT CORR.
″
1 to 12 + 51.64
13 to 24 + 51.11
25 to 50 + 53.28

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
2	− 2.6	− 8.3	0.0	− 10.9
3	− 2.6	+ 8.4	.	+ 5.8
24	− 33 40.4	− 16 18.0	.	− 49 58.4
25	− 0.1	. .	.	− 0.1
27	− 0.7	+ 20.2	.	+ 19.5
28	− 0.7	− 20.2	.	− 20.9
50	− 2.5	+ 7.3	.	+ 4.8

12. Barometer and thermometers read at $7^h\ 18^m$.

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
January 23, E.	1	Mars II, S		5	48 41.23	− 0.22	+ 24.23	11 46 6.38	+ 4 8.08	+ 13.3	5 49 5.24	− 0.51	62 56 49.0	. .
	2	χ^4 Orionis		9	56 33.34	− 0.19	+ 24.24	18 40 6.15	+ 4 50.38	+ 21.6	5 56 57.39	− 2.64	69 51 39.3	− 4.3
	3	ν Orionis		9	0 28.61	− 0.17	+ **24.24**	24 2 5.65	+ 4 16.35	+ 28.4	6 0 52.68	. .	75 13 11.6	− 1.9
	4	δ Ursæ Min. S. P.		5	9 29.22	+ 3.14	+ 24.25	305 28 7.45	+ 3 27.80	− 1 28.9	18 9 56.61	. .	356 36 27.5	− 1.7
	5	μ Geminorum		9	15 27.98	− 0.20	+ **24.28**	16 16 3.32	+ 2 58.78	+ 18.6	6 15 52.04	. .	67 25 41.9	− 1.7
	6	γ Geminorum		9	30 32.27	− 0.17	+ **24.26**	22 20 8.18	+ 3 13.20	+ 26.2	6 30 56.37	. .	73 30 8.8	− 3.2
	7	Stone 3158		6	37 54.23	+ 0.05	+ 24.28	77 2 8.00	+ 4 9.21	+ 4 33.1	6 38 18.56	− 2.43	128 17 11.5	−13.4
	8	Stone 3159		5	37 54.93	+ 0.05	+ 24.28	77 2 8.00	+ 4 11.17	+ 4 33.1	6 38 19.26	− 2.43	128 17 13.5	−13.4
	9	51 Cephei		5	45 3.18	− 4.12	+ 24.29	311 38 6.45	+ 3 2.62	− 1 11.5	6 45 23.35	. .	2 46 18.8	− 2.2
24, S.	10	ϵ Tauri		9	21 20.50	− 0.25	+ **25.59**	19 53 59.90	+ 4 8.86	+ 23.4	4 21 45.82	. .	71 4 53.4	− 3.1
	11	Weisse 777		9	36 31.96	− 0.22	+ 25.59	37 56 4.32	+ 3 46.40	+ 50.3	4 36 57.33	− 2.05	89 7 2.2	− 5.1
	12	Weisse 902		9	43 1.74	− 0.22	+ 25.60	36 50 8.05	+ 3 3.21	+ 48.3	4 43 27.12	− 2.10	88 0 20.8	− 5.0
	13	ι Aurigæ		9	48 55.91	− 0.26	+ **25.62**	5 52 6.80	+ 2 39.12	+ 6.7	4 49 21.25	. .	57 1 13.8	− 3.1
	14	B. A. C. 1555		9	56 56.73	− 0.25	+ 25.62	17 42 7.62	+ 4 28.80	+ 20.6	4 57 22.10	− 2.43	68 53 18.2	− 0.5
	15	B. A. C. 1633		8	9 55.01	− 0.16	+ 25.63	74 52 7.45	+ 4 32.87	+ 3 56.0	5 10 20.48	− 1.98	126 6 57.5	−14.1
	16	α Leporis		9	27 8.26	− 0.20	+ **25.63**	56 42 7.98	+ 4 28.40	+ 1 38.0	5 27 33.72	. .	107 54 35.6	− 3.7
	17	Lalande 11061		9	43 35.20	− 0.23	+ 25.68	34 26 4.12	+ 3 37.63	+ 44.2	5 44 0.65	− 2.36	85 36 47.2	− 7.0
	18	χ^4 Orionis		9	56 31.90	− 0.25	+ 25.69	18 40 7.48	+ 4 48.31	+ 21.8	5 56 57.34	− 2.64	69 51 38.8	− 4.3
	19	51 Cephei		8	44 57.92	− 1.22	+ 25.76	311 38 5.52	+ 3 3.13	− 1 12.1	6 45 22.46	. .	2 46 17.7	− 3.0
	20	δ Geminorum		9	12 41.80	− 0.25	+ **25.79**	16 38 6.92	+ 3 23.52	+ 19.3	7 13 7.34	. .	67 48 10.9	− 4.2
	21	β Geminorum		9	37 43.07	− 0.26	+ **25.80**	10 32 10.28	+ 2 46.48	+ 12.0	7 38 8.64	. .	61 41 30.0	− 4.0
	22	ϕ Geminorum		9	45 53.81	− 0.26	+ **25.86**	11 46 2.22	+ 3 18.29	+ 13.4	7 46 19.39	. .	62 55 55.1	− 3.4
26, E.	23	μ Herculis		9	41 22.91	− 0.46	+ **27.84**	11 2 19.12	+ 3 49.11	+ 11.5	17 41 50.25	. .	62 12 40.9	− 0.6
	24	δ Ursæ Minoris		8	9 33.39	− 4.61	+ 27.80	312 14 9.48	+ 4 5.24	− 1 4.5	18 9 56.58	. .	3 23 31.4	− 0.3
	25	η Serpentis		9	14 45.02	− 0.35	+ **27.76**	41 44 9.88	+ 4 17.78	+ 52.5	18 15 12.47	. .	92 55 41.4	+ 0.3
	26	α Lyræ		9	32 28.64	− 0.52	+ **27.86**	0 10 15.30	+ 3 1.14	+ 0.2	18 32 55.92	. .	51 19 37.8	+ 1.4
	27	β Lyræ		9	45 15.68	− 0.49	+ **27.75**	5 36 10.50	+ 3 50.79	+ 5.8	18 45 42.99	. .	56 46 28.3	0.0
27	28	Sun I, N.		9	39 0.58	− 0.32	+ 27.82	56 52 8.62	+ 4 34.16	+ 1 30.4	20 39 28.08	+68.70	108 4 34.4	. .
	29	Sun II, S.		9	41 17.98	− 0.32	+ 27.82	57 24 6.85	+ 5 2.23	+ 1 32.3	20 41 45.48	−68.70	108 37 2.6	. .
	30	ϵ Eridani		9	26 56.06	− 0.02	+ **27.78**	48 40 8.55	+ 3 55.43	+ 1 8.8	3 27 23.87	. .	99 51 34.0	− 2.3
	31	B. A. C. 1122		4	32 9.38	+ 0.19	+ 27.84	75 26 3.62	+ 4 48.54	+ 3 50.4	3 32 37.41	− 1.32	126 41 3.8	−13.4
	32	η Tauri		9	40 2.70	− 0.27	+ **27.86**	15 6 4.68	+ 2 49.26	+ 16.4	3 40 30.27	. .	66 15 31.5	− 3.4
	33	Moon I, S.		9	42 15.03	− 0.24	+ 27.85	18 48 5.20	+ 3 56.56	+ 20.7	3 42 42.64	+68.32	69 58 43.7	. .
	34	γ^1 Eridani		9	52 5.30	0.00	+ **27.84**	52 40 11.72	+ 2 55.53	+ 1 19.4	3 52 33.16	. .	103 50 47.8	− 2.9
	35	c Persei (R)		.	. . .	. .	. .	188 26 5.40	+ 4 2.82	+ 9.1	. . . .	. .	42 36 3.9	+10.7
	36	c Persei		.	. . .	. .	. .	351 26 5.02	+ 3 45.88	− 9.1	3 59.9 . .	. .	42 36 3.0	+10.7
	37	B. A. C. 1276		9	6 17.44	− 2.68	+ 27.87	318 18 8.65	+ 3 45.10	− 53.8	4 6 42.63	− 8.47	9 27 21.2	+17.3
	38	IV, 1^1		6	10 2.70	+ 0.12	+ 27.88	68 0 12.55	+ 4 5.16	+ 2 29.5	4 10 30.70	− 1.62	119 13 8.4	−12.6
	39	IV, 1^2		5	10 3.85	+ 0.12	+ 27.88	68 0 12.55	+ 5 34.49	+ 2 29.7	4 10 31.85	− 1.62	119 14 37.9	−12.6
	40	B. A. C. 1372		9	19 10.01	+ 0.16	+ 27.89	73 4 7.00	+ 3 54.81	+ 3 17.6	4 19 38.06	− 1.64	124 17 40.6	−13.9
	41	ϵ Tauri		5	21 18.09	− 0.23	+ **27.95**	19 54 4.18	+ 4 6.48	+ 22.0	4 21 45.75	. .	71 4 53.9	− 2.6
	42	Lalande 8612		9	27 26.22	− 0.13	+ 27.90	33 30 10.48	+ 3 36.84	+ 40.2	4 27 53.99	− 2.02	84 40 48.7	− 3.7
	43	Weisse (2) 650		9	30 52.84	− 0.24	+ 27.90	18 22 6.72	+ 4 22.86	+ 20.2	4 31 20.50	− 2.26	69 33 11.0	+ 0.7
	44	D. M. + 1°, 808		6	37 30.47	− 0.11	+ 27.91	36 58 8.92	+ 3 29.30	+ 45.8	4 37 58.27	− 2.03	88 8 45.2	− 5.2
	45	D. M. + 1°, 809		5	37 33.72	− 0.11	+ 27.91	36 58 8.92	+ 3 13.14	+ 45.8	4 38 1.52	− 2.03	88 8 29.1	− 5.2
	46	IV, 6		9	45 20.23	+ 0.10	+ 27.91	66 6 6.52	+ 3 37.69	+ 2 16.7	4 45 48.24	− 1.83	117 18 22.1	−12.9
	47	Lalande 9258	8.0	6	52 27.37	− 0.82	+ 27.92	338 34 6.58	+ 4 52.21	− 23.7	4 52 54.47	− 3.96	29 44 56.3	+ 9.8
	48	B. A. C. 1536		5	52 32.27	− 0.82	+ 27.92	338 34 6.58	+ 3 40.67	− 23.8	4 52 59.37	− 3.96	29 43 44.6	+ 9.8
	49	Weisse 1296		9	58 52.38	− 0.10	+ 27.93	37 48 9.40	+ 3 53.96	+ 47.2	4 59 20.21	− 2.12	88 59 11.8	− 6.3
	50	Weisse (2) 1421^1	7	6	1 55.52	− 0.31	+ 27.93	10 56 9.12	+ 4 30.57	+ 11.8	5 2 23.14	− 2.55	62 7 12.7	+ 1.0

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
9	30.55	19.0	16.0
10	30.66	17.2	13.3
15	. .	. .	13.2
19	30.65	17.0	13.8
22	30.63	17.0	14.2
24	30.17	47.8	48.8
29	30.18	46.9	47.3
32	30.36	40.0	37.5

For summary of the constants of reduction see page 3.

4, 22, 24, 45. One bisection.
9, 19, 33. Three bisections.
10, 11, 27. Four bisections.

ZENITH-POINT CORR.

″

1 to 9 + 53.28
10 to 29 + 53.82
30 to 50 + 51.72

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
1	− 2.5	− 7.3	0.0	− 9.8
28	− 7.5	+ 16 14.1	.	+ 16 6.6
29	− 7.5	− 16 14.1	.	− 16 21.6
33	− 18 2.2	− 15 23.5	.	− 33 25.7

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
January 27, E.	1	Weisse (2) 1421²	8.5	5	1 55.99	− 0.31	+ 27.93	10 56 9.12	+ 4 19.36	+ 11.8	5 2 23.61	− 2.55	62 7 1.5	+ 1.0
	2	Weisse (2) 266	.	9	12 33.19	− 0.45	+ 27.94	357 52 9.42	+ 3 39.57	− 2.2	5 13 0.68	− 2.98	49 2 8.0	+ 3.7
	3	B. A. C. 1661	.	9	15 27.78	− 0.12	+ 27.95	35 22 9.68	+ 3 31.92	+ 43.3	5 15 55.61	− 2.22	86 32 46.1	− 6.4
	4	Weisse 342	.	5	16 12.24	− 0.12	+ 27.95	35 22 9.68	+ 5 2.31	+ 43.3	5 16 40.07	− 2.22	86 34 16.5	− 6.4
	5	Weisse 343	8.	5	16 13.32	− 0.12	+ 27.95	35 22 9.68	+ 4 34.97	+ 43.3	5 16 41.15	− 2.22	86 33 49.1	− 6.4
	6	B. A. C. 1739	.	9	26 35.48	+ 0.18	+ 27.96	74 20 12.18	+ 3 35.12	+ 3 35.0	5 27 3.62	− 2.03	125 33 43.5	−14.7
	7	ι¹ Orionis	.	6	29 13.93	− 0.05	+ 27.96	44 52 12.30	− 0 7.39	+ 1 0.5	5 29 41.84	− 2.18	95 59 26.6	− 9.2
	8	ι² Orionis	8.	5	29 14.48	− 0.05	+ 27.96	44 52 12.30	+ 0 1.92	+ 1 0.5	5 29 42.39	− 2.18	95 59 35.9	− 9.2
	9	Mars I, N.	.	6	46 49.30	− 0.30	+ 27.98	11 50 11.50	+ 3 53.03	+ 12.8	5 47 16.98	+ 0.59	63 0 38.5	. .
	10	Mars II, S.	.	5	46 50.43	− 0.30	+ 27.98	11 50 11.50	+ 4 8.45	+ 12.8	5 47 18.11	− 0.54	63 0 54.0	. .
	11	D.M. + 17°, 1115	.	6	57 49.27	− 0.22	+ 27.99	20 54 5.68	+ 3 16.13	+ 23.3	5 58 17.04	− 2.58	72 4 6.3	− 5.0
	12	Anonymous	.	5	57 51.60	− 0.22	+ 27.99	20 54 5.68	+ 1 40.21	+ 23.3	5 58 19.37	− 2.58	72 2 30.4	− 5.0
	13	δ Ursæ Min., S. P.	.	7	9 21.53	+ 7.38	+ 28.01	305 28 11.32	+ 3 20.89	− 1 25.3	18 9 56.92	. .	356 36 28.1	− 0.1
	14	μ Geminorum	.	9	15 24.29	− 0.26	+ **28.02**	16 16 9.38	+ 2 53.30	+ 17.9	6 15 52.04	. .	67 25 41.8	− 1.7
	15	O. Arg. S. 5133	.	9	22 0.42	+ 0.09	+ 28.02	64 34 8.75	+ 4 16.30	+ 2 8.2	6 22 28.53	− 2.29	115 46 54.4	−13.5
	16	D. M. + 72°, 325	.	5	24 42.88	− 1.45	+ 28.02	326 14 7.02	+ 4 43.44	− 40.7	6 25 9.45	− 6.79	17 24 31.0	+ 3.0
	17	γ Geminorum	.	9	30 28.53	− 0.21	+ **28.04**	22 20 11.15	+ 3 13.63	+ 25.2	6 30 56.35	. .	73 30 11.2	− 1.0
	18	ε Geminorum (R)	.	.	. . .	. .	. .	166 18 15.55	+ 3 0.94	− 14.8	. . . .	. .	64 45 19.5	− 5.9
	19	ε Geminorum	.	.	. . .	. .	. .	13 34 11.78	+ 4 30.11	+ 14.8	6 36.7	. .	64 45 17.9	− 5.9
	20	51 Cephei	.	5	45 3.28	− 9.12	+ 28.05	311 38 10.80	+ 2 55.31	− 1 8.6	6 45 22.21	. .	2 46 18.7	− 1.2
	21	Weisse (2) 1656	.	6	56 4.18	− 0.30	+ 28.06	11 48 9.45	+ 4 55.86	+ 12.9	6 56 31.94	− 2.90	62 59 39.4	− 7.0
	22	Anonymous	8.0	8	2 56.17	+ 0.09	+ 28.07	65 2 10.40	+ 5 4.90	+ 2 11.3	7 3 24.33	− 2.43	116 15 47.8	−13.5
	23	δ Canis Majoris	.	8	3 9.91	+ 0.09	+ **28.05**	65 2 10.40	+ 1 54.04	+ 2 10.9	7 3 38.07	. .	116 12 36.5	− 1.3
	24	Taylor 2910	.	8	7 5.57	+ 0.13	+ 28.07	69 24 10.32	+ 4 29.94	+ 2 42.2	7 7 33.77	− 2.46	120 37 43.7	−13.7
	25	δ Geminorum	.	9	12 39.52	− 0.26	+ **28.08**	16 38 13.68	+ 3 20.12	+ 18.4	7 3 7.34	. .	67 48 13.4	− 1.7
29, W.	26	γ Draconis	.	9	53 22.41	− 0.70	+ **29.23**	347 20 2.15	+ 3 46.56	− 13.9	17 53 50.94	. .	38 29 56.0	− 2.2
	27	α Lyræ	.	9	32 27.13	− 0.32	+ **29.23**	0 10 1.08	+ 3 11.58	+ 0.2	18 32 56.04	. .	51 19 34.1	− 3.1
30	28	Sun I, N.	.	9	51 19.80	+ 0.62	+ 29.23	56 4 2.98	+ 4 14.27	+ 1 30.3	20 51 49.65	+68.36	107 16 8.7	. .
	29	Sun II, S.	.	9	53 36.52	+ 0.62	+ 29.23	56 36 6.88	+ 4 39.12	+ 1 32.2	20 54 6.37	−68.36	107 48 39.4	. .
31, S.	30	ζ Aquilæ	.	9	59 28.33	− 0.08	+ **30.94**	25 8 8.72	+ 3 41.30	+ 28.5	18 59 59.17	. .	76 18 39.7	− 1.2
	31	δ Draconis	.	9	11 58.92	− 1.35	+ 30.92	331 24 4.92	+ 2 53.73	− 32.9	19 12 28.49	. .	22 32 46.9	− 1.5
	32	δ Aquilæ	.	9	19 2.04	+ 0.03	+ **30.92**	35 56 10.30	+ 3 52.23	+ 43.9	19 19 32.99	. .	87 7 7.6	− 1.7
	33	γ Aquilæ	.	9	40 8.08	− 0.04	+ **30.91**	28 30 12.68	+ 3 15.54	+ 32.8	19 40 38.97	. .	79 40 22.2	− 1.2
	34	α Aquilæ	.	9	44 30.64	− 0.03	+ **30.93**	30 16 10.22	+ 3 24.22	+ 35.3	19 45 1.54	. .	81 26 30.9	− 0.7
	35	Venus I, S.	.	6	42 46.45	+ 0.24	+ 30.93	58 4 3.90	+ 3 32.88	+ 1 36.3	20 43 17.62	+ 0.34	109 15 34.3	. .
	36	Venus II, N.	.	5	42 47.14	+ 0.24	+ 30.93	58 4 3.90	+ 3 25.15	+ 1 36.3	20 43 18.31	− 0.35	109 15 26.5	. .
February 1	37	Sun I, S.	.	9	59 28.48	+ 0.23	+ 30.94	56 3 55.45	+ 3 4.97	+ 1 28.9	20 59 59.65	+68.12	107 14 50.5	. .
	38	Sun II, N.	.	9	1 44.73	+ 0.23	+ 30.94	55 30 3.00	+ 4 31.24	+ 1 27.2	21 2 15.90	−68.13	106 42 22.6	. .
	39	α Aquarii	.	9	59 12.49	+ 0.06	+ **30.92**	39 42 13.18	+ 4 4.10	+ 49.7	21 59 43.49	. .	90 53 28.2	− 1.4
	40	Mercury C.	.	9	7 42.64	+ 0.17	+ 30.94	50 52 9.22	+ 2 47.31	+ 1 13.4	22 8 13.75	+ 0.05	102 2 31.1	. .
	41	ζ Pegasi	.	9	35 3.87	− 0.04	+ **30.97**	28 36 12.55	+ 3 50.80	+ 32.5	22 35 34.78	. .	79 46 57.1	− 0.7
	42	ι Cephei	.	9	44 57.67	− 1.22	+ 30.95	333 16 12.72	+ 2 50.75	− 29.9	22 45 27.40	. .	24 24 54.8	− 1.2
	43	α Piscis Australis	.	9	50 36.41	+ 0.37	+ **30.89**	69 2 23.42	+ 3 30.99	+ 2 34.4	22 51 7.73	. .	120 14 50.0	− 1.0
	44	α Pegasi	.	9	58 22.32	− 0.09	+ **31.01**	24 16 2.82	+ 2 47.74	+ 26.8	22 58 53.18	. .	75 25 38.6	− 0.7
	45	α Ceti	.	9	55 37.08	+ 0.04	+ **31.02**	35 12 3.32	+ 3 18.18	+ 42.8	2 56 8.18	. .	86 22 25.5	− 2.0
	46	Jupiter I, S.	.	6	58 55.70	− 0.09	− 31.06	22 43 58.15	+ 4 2.73	+ 25.5	2 59 26.67	+ 1.42	73 54 47.6	. .
	47	Jupiter II, N.	.	5	58 58.54	− 0.09	+ 31.06	22 43 58.15	+ 3 22.88	+ 25.5	2 59 29.51	− 1.42	73 54 7.7	. .
	48	ζ Arietis	.	9	7 37.93	− 0.13	+ **31.11**	18 14 1.25	+ 2 49.35	+ 20.0	3 8 8.87	. .	69 23 31.8	− 1.4
	49	B. A. C. 1287 (R)	.	.	. . .	. .	. .	189 8 8.70	+ 4 41.51	+ 9.9	. . . .	. .	41 53 21.1	+10.7
	50	B. A. C. 1287	.	.	. . .	. .	. .	350 44 2.62	+ 3 5.65	- 9.9	4 6.2	. .	41 53 19.6	+10.7

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
25	30.26	32.7	30.5
26	30.26	25.2	24.7
29	30.20	32.2	33.3
30	30.00	31.6	32.0
34	30.04	33.8	34.5
36	30.03	35.4	36.0
38	30.04	35.9	37.9
40	30.03	38.2	39.2
44	. .	. .	41.5
48	30.03	35.1	31.2

For summary of the constants of reduction see page 3.

		ZENITH-POINT CORR.
		″
12, 19.	One bisection.	1 to 25 + 51.72
13, 20.	Three bisections.	26 to 29 + 51.89
26, 30, 33, 34, 39, 40, 44.	Four bisections.	30 to 44 + 51.65
		45 to 50 + 52.13

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
9	− 2.4	+ 7.8	.	+ 5.4
10	− 2.4	− 7.7	0.0	− 10.1
28	− 7.4	+ 16 15.3	.	+ 16 7.9
29	− 7.5	− 16 15.3	.	− 16 22.8
35	− 4.4	− 3.9	+ 0.1	− 8.2
36	− 4.4	+ 3.9	.	− 0.5
37	− 7.4	− 16 14.0	.	− 16 21.4
38	− 7.4	+ 16 13.9	.	+ 16 6.5
40	− 6.3	. .	− 0.3	− 6.6
46	− 0.7	− 19.9	.	− 20.6
47	− 0.7	+ 20.0	.	+ 19.3

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
February 1, S.	1	Lalande 8612		9	27 22.76	+ 0.02	+ 31.14	33 30 7.80	+ 3 40.76	+ 40.4	4 27 53.92	− 1.98	84 40 50.2	− 4.0
	2	Weisse 1296		9	58 49.07	+ 0.06	+ 31.17	37 48 6.80	+ 3 57.86	+ 47.4	4 59 20.30	− 2.09	88 59 13.3	− 6.7
	3	B. A. C. 1619		9	10 55.91	− 2.60	+ 31.18	320 58 3.60	+ 4 16.76	− 49.3	5 11 24.49	− 8.00	12 7 52.3	+12.2
	4	B. A. C. 1753		9	28 24.54	+ 0.45	+ 31.19	74 0 7.78	+ 3 33.70	+ 3 30.6	5 28 56.18	− 1.97	125 13 33.3	−15.7
	5	Lalande 11061		8	43 29.42	+ 0.03	+ 31.20	34 26 8.65	+ 3 38.12	+ 41.9	5 44 0.65	− 2.32	85 36 49.9	− 7.7
	6	Mars I, S.		6	45 52.55	− 0.21	+ 31.21	11 56 2.72	+ 3 45.81	+ 13.0	5 46 23.55	+ 0.54	63 6 22.7	. .
	7	Mars II, N.		5	45 53.57	− 0.21	+ 31.21	11 56 2.72	+ 3 32.50	+ 13.0	5 46 24.57	− 0.48	63 6 9.4	. .
	8	ν Orionis		9	0 21.47	− 0.07	+ **31.23**	24 2 7.60	+ 4 15.73	+ 27.3	6 0 52.62	. .	75 13 11.8	− 2.0
	9	δ Ursæ Min., S. P.		8	9 16.41	+ 9.90	+ 31.23	305 28 6.82	+ 3 22.85	− 1 25.3	18 9 57.54	. .	356 36 25.6	− 1.2
	10	μ Geminorum		9	15 20.94	− 0.15	+ **31.23**	16 16 5.55	+ 2 57.01	+ 17.9	6 15 52.02	. .	67 25 41.7	− 1.8
	11	γ Geminorum		9	30 25.19	− 0.09	+ **31.24**	22 20 7.20	+ 3 16.80	+ 25.1	6 30 56.33	. .	73 30 10.3	− 2.0
	12	B. A. C. 2202		9	36 54.04	+ 0.52	+ 31.23	78 58 8.62	+ 4 55.75	+ 5 6.8	6 37 25.79	− 2.36	130 14 32.4	−16.1
	13	Yarnall 2790		9	48 18.30	+ 0.32	+ 31.23	63 4 5.08	+ 2 11.96	+ 1 59.8	6 48 49.85	− 2.37	114 14 38.0	−14.6
	14	Weisse (2) 1630		9	55 5.36	− 0.10	+ 31.23	20 54 3.80	+ 3 59.06	+ 23.4	6 55 36.49	− 2.73	72 4 47.5	− 8.4
	15	Anonymous		8	2 52.81	+ 0.34	+ 31.22	65 2 5.22	+ 5 10.97	+ 2 10.9	7 3 24.37	− 2.42	116 15 48.3	−14.8
	16	δ Canis Majoris		8	3 6.51	+ 0.34	+ **31.17**	65 2 5.22	+ 2 0.76	+ 2 10.7	7 3 38.07	. .	116 12 37.9	− 0.9
	17	Stone 3761		9	32 37.59	+ 0.46	+ 31.22	74 58 7.32	+ 1 8.87	+ 3 44.2	7 33 9.27	− 2.57	126 9 21.6	−15.0
	18	B. A. C. 2536		9	33 58.29	+ 0.46	+ 31.22	74 58 7.32	+ 5 41.95	+ 3 45.2	7 34 29.97	− 2.58	126 13 55.7	−15.0
	19	φ Geminorum		9	45 48.40	− 0.21	+ **31.25**	11 46 7.40	+ 3 15.10	+ 12.8	7 46 19.41	. .	62 55 56.5	− 1.7
	20	B. A. C. 2655		9	52 29.00	+ 0.39	+ 31.21	68 48 8.92	+ 4 10.86	+ 2 36.7	7 53 0.60	− 2.59	120 1 17.7	−14.5
	21	15 Argus		9	2 2.17	+ 0.31	+ **31.23**	62 46 5.30	+ 3 41.90	+ 1 58.3	8 2 33.69	. .	113 58 6.7	− 1.3
	22	Moon I, S.		9	10 29.58	− 0.08	+ 31.21	23 40 7.98	+ 3 23.32	+ 26.8	8 11 0.71	+63.58	74 50 19.3	. .
R.	23	α Lyræ		9	32 24.83	− 0.48	+ **31.76**	0 10 6.45	+ 3 8.45	+ 0.3	18 32 56.03	. .	51 19 36.4	− 1.6
	24	ζ Aquilæ		9	59 27.76	− 0.20	+ **31.65**	25 8 7.05	+ 3 42.53	+ 28.7	18 59 59.25	. .	76 18 39.5	− 1.6
	25	δ Draconis		9	11 58.08	− 1.31	+ 31.69	331 24 2.80	+ 2 55.28	− 33.1	19 12 28.46	. .	22 32 46.2	− 2.5
	26	γ Aquilæ		9	40 7.48	− 0.17	+ **31.66**	28 30 9.88	+ 3 18.52	+ 33.0	19 40 39.00	. .	79 40 22.6	− 0.9
	27	α Aquilæ		9	44 30.04	− 0.16	+ **31.68**	30 16 4.95	+ 3 28.98	+ 35.4	19 45 1.57	. .	81 26 30.5	− 1.2
2	28	Sun I, N.		9	3 31.47	+ 0.06	+ 31.71	55 14 1.58	+ 3 11.52	+ 1 26.1	21 4 3.24	+68.07	106 25 0.4	. .
	29	Sun II, S.		9	5 47.62	+ 0.06	+ 31.71	55 46 2.45	+ 3 42.46	+ 1 27.9	21 6 19.39	−68.08	106 57 34.0	. .
	30	Mercury I, C.		9	12 53.81	+ 0.01	+ 31.72	50 10 6.62	+ 2 58.23	+ 1 11.0	22 13 25.54	+ 0.21	101 20 37.0	. .
	31	ι Cephei		6	44 57.20	− 1.20	+ 31.72	333 16 2.30	+ 3 1.74	− 29.7	22 45 27.72	. .	24 24 55.5	− 0.8
	32	48 Cephei		9	4 58.78	− 2.27	+ 31.75	321 32 2.65	+ 4 5.75	− 47.4	3 5 28.26	. .	12 41 42.2	− 0.8
	33	α Persei		9	15 25.38	− 0.62	+ **31.75**	349 24 1.48	+ 3 9.29	− 11.2	3 15 56.52	. .	40 33 20.8	− 1.8
	34	ε Eridani		9	26 51.89	+ 0.02	+ **31.82**	48 40 8.02	+ 3 57.84	+ 1 8.2	3 27 23.68	. .	99 51 35.3	− 1.4
	35	δ Persei		9	34 2.91	− 0.58	+ **31.74**	351 26 5.32	+ 2 56.58	− 9.0	3 34 34.10	. .	42 35 14.1	− 2.0
	36	η Tauri		9	39 58.69	− 0.26	+ **31.77**	15 6 4.35	+ 2 50.67	+ 16.2	3 40 30.21	. .	66 15 32.4	− 2.7
	37	ζ Ursæ Min., S. P.		9	47 40.60	+ 2.41	+ 31.78	297 0 3.80	+ 4 34.22	− 1 56.8	15 48 14.79	. .	348 9 2.4	− 0.9
	38	β Orionis (R)			. . . .	. .	. .	132 44 1.90	+ 2 53.25	− 1 4.9	. . . .	. .	98 20 30.9	+ 0.4
	39	β Orionis			. . . .	. .	. .	47 10 6.10	+ 2 56.71	+ 1 4.9	5 8.9	. .	98 20 28.9	− 1.6
	40	B. A. C. 1719		9	22 47.78	+ 0.33	+ 31.86	79 48 7.08	+ 3 10.73	+ 5 25.4	5 23 19.97	− 1.90	131 3 4.4	−16.6
	41	Weisse 619		9	26 13.51	− 0.04	+ 31.86	40 30 3.72	+ 3 33.97	+ 51.5	5 26 45.33	− 2.17	91 40 50.4	− 8.6
	42	Lalande 10583		9	31 33.96	− 0.38	+ 31.87	4 22 6.22	+ 4 3.22	+ 4.7	5 32 5.45	− 2.82	55 32 35.3	+ 1.0
	43	Mars I, N.		6	45 51.47	− 0.30	+ 31.88	11 56 2.38	+ 4 40.64	+ 12.8	5 46 23.05	+ 0.55	63 7 17.0	. .
	44	Mars II, S.		5	45 52.51	− 0.30	+ 31.88	11 56 2.38	+ 4 54.68	+ 12.8	5 46 24.09	− 0.49	63 7 31.1	. .
	45	D. M+17°, 1115	9.3	6	57 45.40	− 0.21	+ 31.89	20 54 2.12	+ 3 21.55	+ 23.1	5 58 17.08	− 2.56	72 4 8.0	− 5.1
	46	Anonymous	10.2	5	57 47.50	− 0.21	+ 31.89	20 54 2.12	+ 1 40.77	+ 23.0	5 58 19.18	− 2.56	72 2 27.1	− 5.1
	47	η Geminorum		9	7 16.24	− 0.25	+ 31.90	16 18 6.05	+ 2 56.92	+ 17.7	6 7 47.89	− 2.68	67 27 41.9	− 4.5
	48	B. A. C. 2036		9	12 30.24	+ 0.28	+ 31.90	76 26 5.15	+ 5 33.23	+ 4 6.8	6 13 2.42	− 2.20	127 42 6.4	−16.3
	49	B. A. C. 2072		9	18 17.43	+ 0.21	+ 31.90	69 40 6.62	+ 4 11.85	+ 2 42.0	6 18 49.54	− 2.23	120 53 21.7	−15.5
	50	D. M. + 72°, 325	9.2	9	24 38.91	− 1.64	+ 31.91	326 14 0.20	+ 4 48.36	− 40.2	6 25 9.18	− 6.68	17 24 29.6	+ 4.4

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
1	30.02	33.6	29.1
5	30.00	32.8	28.2
14	30.00	31.9	27.6
22	30.00	31.2	28.3
23	30.09	29.3	27.7
25	30.09	31.0	30.3
27	30.09	33.7	32.6
29	30.07	37.8	38.8
30	30.03	40.3	43.3
31	30.03	46.7	45.0
32	29.96	39.2	36.4
40	29.90	36.3	32.9
43	29.88	36.2	32.7

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

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9, 22. Three bisections. 1 to 22 + 52.13

23, 25, 26, 33, 37, 50. Four bisections. 23 to 31 + 51.57

32 to 50 + 52.33

31. Barometer and thermometers read at 23h 0m.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
6	− 2.3	− 6.6	0.0	− 8.9
7	− 2.3	+ 6.7	.	+ 4.4
22	− 21 36.6	− 14 47.4	.	− 36 24.0
28	− 7.3	+ 16 16.8	.	+ 16 9.5
29	− 7.4	− 16 16.8	.	− 16 24.2
30	− 6.4	. .	− 0.3	− 6.7
43	− 2.3	+ 7.1	.	+ 4.8
44	− 2.3	− 7.0	0.0	− 9.3

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
February 2, R.	1	B. A. C. 2180		9	32 38.57	+ 0.28	+ 31.92	75 38 6.38	+ 5 21.76	+ 3 53.0	6 33 10.77	− 2.31	126 53 42.3	−16.1
	2	D. M. + 72°, 337	9.4	9	39 56.31	− 1.64	+ 31.92	326 14 0.22	+ 5 29.29	− 40.2	6 40 26.59	− 6.77	17 25 10.5	+ 2.9
	3	B. A. C. 2295		9	53 36.13	+ 0.24	+ 31.93	72 44 1.95	+ 3 47.39	+ 3 12.8	6 54 8.30	− 2.40	123 57 23.3	−15.7
	4	β Geminorum		9	37 37.00	− 0.31	+ **31.95**	10 32 6.85	+ 2 52.95	+ 11.3	7 38 8.66	. .	61 41 32.3	− 1.3
	5	λ Ursæ Min., S. P.		4	39 35.75	+27.66	+ 31.97	307 48 3.98	+ 3 47.32	− 1 17.6	19 40 35.38	. .	358 56 54.9	− 0.7
	6	3 Ursæ Majoris		9	0 38.34	− 1.33	+ 31.99	330 2 6.78	+ 3 1.69	− 34.8	8 1 9.00	. .	21 10 54.9	− 1.6
	7	Iris		9	10 24.92	− 0.17	+ 31.99	26 10 7.00	+ 3 32.26	+ 29.8	8 10 56.74	. .	77 20 30.3	− 3.1
	8	B. A. C. 2809		9	16 38.49	+ 0.30	+ 32.00	78 0 5.25	+ 3 52.23	+ 4 39.3	8 17 10.79	− 2.75	129 14 58.0	−14.1
	9	η Cancri		9	25 24.09	− 0.24	+ **32.06**	17 58 6.20	+ 4 56.40	+ 19.7	8 25 55.86	. .	69 9 43.5	− 2.0
	10	γ Cancri (R)			. . . .	. .	. .	162 56 9.12	+ 3 46.52	− 18.5	. . . .	. .	68 6 44.1	−13.4
	11	γ Cancri			. . . .	. .	. .	16 56 4.88	+ 3 57.44	+ 18.5	8 36.5	. .	68 6 42.0	−13.4
	12	ε Hydræ		9	40 2.43	− 0.12	+ **31.99**	31 58 5.12	+ 4 4.83	+ 37.8	8 40 34.33	. .	83 9 9.0	− 2.3
	13	ι Ursæ Maj. (R)			. . . .	. .	. .	189 32 7.92	+ 4 3.35	+ 10.2	. . . .	. .	41 29 59.7	+ 0.8
	14	ι Ursæ Majoris			. . . .	. .	. .	350 20 8.55	+ 3 37.85	− 10.2	8 51.2	. .	41 29 57.4	− 1.5
	15	Moon I, S.		9	58 51.20	− 0.16	+ 32.03	27 18 6.68	+ 3 7.65	+ 31.3	8 59 23.07	+62.31	78 28 6.8	. .
	16	Moon II		6	0 55.79	− 0.16	+ 32.03	27 2 . .	. . . .	. .	9 1 27.66	−62.28	78 13 . .	. .
	17	α Hydræ		9	21 17.90	+ 0.01	+ **32.04**	46 58 7.85	+ 3 32.15	+ 1 4.8	9 21 49.96	. .	98 9 6.0	− 0.6
3, W.	18	β Tauri		9	18 20.59	− 0.35	+ **32.31**	10 18 1.42	+ 5 0.93	+ 11.1	5 18 52.54	. .	61 29 34.7	− 2.6
	19	δ Orionis		9	25 28.64	− 0.13	+ **32.35**	39 12 . .	. . . .	. .	5 26 0.82	. .	90 23 . .	. .
	20	α Leporis		9	27 1.38	− 0.01	+ **32.21**	56 42 . .	. . . .	. .	5 27 33.68	. .	107 55 . .	. .
	21	ε Orionis		7	29 43.59	− 0.12	+ **32.25**	40 6 4.10	+ 3 32.28	+ 50.9	5 30 15.78	. .	91 16 48.5	− 2.9
	22	D. M. + 31°, 1126		9	44 21.74	− 0.38	+ 32.32	7 3 59.65	+ 4 9.68	+ 7.6	5 44 53.68	− 2.79	58 14 38.1	− 0.6
	23	Taylor 2245		9	51 54.40	+ 0.10	+ 32.32	70 46 3.68	+ 4 28.27	+ 2 52.4	5 52 26.82	− 2.08	121 59 45.6	−15.6
	24	ν Orionis		9	0 20.42	− 0.24	+ **32.43**	24 2 3.18	+ 4 20.60	+ 27.0	6 0 52.50	. .	75 13 12.0	− 1.8
	25	δ Ursæ Min., S. P.		8	9 18.34	+ 7.33	+ 32.33	305 28 2.85	+ 3 25.75	− 1 24.5	6 9 58.00	. .	356 36 25.3	− 0.9
	26	Lal. 12148 (*med.*)		9	15 27.59	− 0.26	+ 32.33	21 10 2.50	+ 5 27.93	+ 23.5	6 15 59.66	− 2.61	72 22 15.1	− 6.2
	27	O. Arg. S. 5133		7	21 56.07	+ 0.05	+ 32.33	64 34 2.42	+ 4 24.71	+ 2 7.1	6 22 28.45	− 2.24	115 46 55.4	−15.0
	28	O. Arg. S. 5144		5	22 25.49	+ 0.05	+ 32.33	64 34 2.42	+ 3 42.60	+ 2 7.0	6 22 57.87	− 2.24	115 46 13.2	−15.0
	29	B. A. C. 2147		4	27 43.86	+ 0.10	+ 32.33	70 43 59.75	+ 3 36.98	+ 2 52.2	6 28 16.29	− 2.26	121 56 50.1	−15.8
	30	B. A. C. 2202		5	36 53.10	+ 0.18	+ 32.34	79 0 4.72	+ 3 5.58	+ 5 4.4	6 37 25.62	− 2.33	130 14 35.9	−16.5
	31	Weisse 1452 (R)			. . . .	. .	. .	143 18 5.38	+ 0 16.29	− 45.1	. . . .	. .	87 48 44.7	−10.9
	32	Weisse 1452			. . . .	. .	. .	36 34 2.00	+ 7 33.14	+ 45.1	6 48.8	. .	87 48 41.4	−10.9
	33	α Canis Minoris		9	32 37.77	− 0.17	+ **32.46**	33 18 4.18	+ 3 29.10	+ 40.0	7 33 9.96	. .	84 28 34.5	− 2.1
	34	β Geminorum		9	37 36.66	− 0.35	+ **32.33**	10 32 5.85	+ 2 53.63	+ 11.4	7 38 8.68	. .	61 41 32.1	− 1.5
	35	φ Geminorum		9	45 47.47	− 0.34	+ **32.31**	11 46 3.28	+ 3 18.37	+ 12.7	7 46 19.50	. .	62 55 55.5	− 2.6
	36	B. A. C. 2649		9	51 18.19	− 0.25	+ 32.37	22 0 5.52	+ 3 10.41	+ 24.6	7 51 50.31	− 2.80	73 10 1.7	−11.5
	37	Weisse (2) 1566		9	58 9.67	− 0.47	+ 32.38	359 28 7.25	+ 4 6.92	− 0.5	7 58 41.58	− 3.32	50 38 34.9	− 9.3
5, R.	38	β Lyræ		9	45 9.18	− 0.45	+ **34.42**	5 35 55.75	+ 4 6.28	+ 6.0	18 45 43.11	. .	56 46 29.2	− 1.5
	39	ζ Aquilæ		9	59 25.19	− 0.29	+ **34.40**	25 7 56.65	+ 3 53.42	+ 28.6	18 59 59.28	. .	76 18 39.9	− 1.8
	40	δ Draconis		9	11 55.39	− 1.17	+ 34.39	331 23 57.65	+ 3 1.19	− 33.1	19 12 28.61	. .	22 32 46.9	− 3.0
	41	δ Aquilæ		8	18 59.00	− 0.22	+ **34.31**	35 56 5.48	+ 3 56.07	+ 44.1	19 19 33.18	. .	87 7 6.9	− 3.0
	42	γ Aquilæ		9	40 4.87	− 0.27	+ **34.44**	28 30 3.50	+ 3 24.64	+ 32.9	19 40 39.01	. .	79 40 22.2	− 2.0
6	43	Sun I, N.		9	19 35.62	− 0.10	+ 34.46	54 1 57.92	+ 3 1.95	+ 1 22.0	21 20 9.98	+67.57	105 12 43.1	. .
	44	Sun II, S.		9	21 50.76	− 0.10	+ 34.46	54 33 55.18	+ 3 33.12	+ 1 23.7	21 22 25.12	−67.57	105 45 13.2	. .
	45	Mercury I, C.		9	30 6.22	− 0.15	+ 34.50	47 29 55.62	+ 4 17.40	+ 1 4.7	22 30 40.57	+ 0.24	98 41 38.9	. .
	46	ζ Pegasi		9	35 0.54	− 0.27	+ **34.53**	28 35 56.72	+ 4 8.14	+ 32.4	22 35 34.77	. .	79 46 58.5	+ 0.1
	47	ι Cephei		9	44 54.04	− 1.08	+ 34.51	333 15 54.70	+ 3 10.61	− 29.7	22 45 27.47	. .	24 24 56.8	− 0.7
	48	α Pegasi		9	58 19.04	− 0.30	+ **34.49**	24 16 5.30	+ 2 44.57	+ 26.7	22 58 53.25	. .	75 25 37.8	− 2.0
	49	α Andromedæ		9	1 43.71	− 0.40	+ **34.54**	10 23 54.42	+ 3 3.54	+ 10.9	0 2 17.82	. .	61 33 30.1	+ 0.2
	50	Jupiter I, N.		6	0 29.32	− 0.30	+ 34.61	22 35 38.70	+ 3 31.75	+ 24.9	3 1 3.63	+ 1.40	73 45 56.5	. .

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
3	29.87	34.4	30.3
5	29.85	33.7	30.1
16	29.85	33.2	29.9
18	30.08	37.6	34.8
31	30.06	35.9	32.3
37	30.07	33.9	29.9
38	30.23	33.6	32.1
42	30.25	36.3	35.5
44	30.25	41.7	43.9
45	30.24	43.6	46.2
48	. .	. .	47.2
49	30.26	47.2	47.3

For summary of the constants of reduction see page 3.

	ZENITH POINT CORR.	
	″	
32, 50. One bisection.	1 to 17	+ 52.33
5, 15, 25. Three bisections.	18 to 37	+ 52.25
2, 17, 38, 40, 42, 45, 49. Four bisections.	38 to 49	+ 51.14
	50	+ 57.97

3. Barometer and Thermometers read at 7^h 9^m.
5. Barometer and Thermometers read at 7^h 55^m.
37. Barometer and Thermometers read at 8^h 30^m.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
15	− 24 38.2	− 14 44.8	.	− 39 23.0
43	− 7.2	+ 16 15.0	.	+ 16 7.8
44	− 7.3	− 16 15.0	.	− 16 22.3
45	− 6.8	. .	− 0.6	− 7.4
50	− 0.7	+ 18.9	.	+ 18.2

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
February														
6, R.	1	Jupiter II, S.		5	0 32.13	− 0.30	34.61	22 35 38.70	+ 4 9.55	+ 24.9	3 1 6.44	− 1.41	73 46 34.3	. .
	2	ε Eridani		9	26 49.24	− 0.14	**34.56**	48 39 50.48	+ 4 16.40	+ 1 8.1	3 27 23.73	. .	99 51 36.2	− 0.8
	3	η Tauri.		9	39 55.79	− 0.36	**34.70**	15 5 48.90	+ 3 7.94	+ 16.2	3 40 30.06	. .	66 15 34.2	− 1.0
	4	ζ Persei.		9	46 10.80	− 0.42	**34.64**	7 17 58.65	+ 3 29.85	+ 7.7	3 46 45.02	. .	58 27 57.4	− 1.4
	5	ε Persei (R)			. . .	. .	. .	188 25 47.08	+ 4 22.08	+ 9.0	. . .	. .	42 36 3.0	+11.1
	6	ε Persei.			. . .	. .	. .	351 25 55.32	+ 3 54.66	− 9.0	3 59.9	. .	42 36 2.2	+11.1
	7	Weisse (2) 248		9	13 1.36	− 0.32	34.66	20 21 46.90	+ 3 51.97	+ 22.4	4 13 35.70	− 1.99	71 32 22.5	+ 0.8
	8	θ¹ Tauri.		5	21 17.73	− 0.30	34.66	23 7 45.80	+ 3 31.07	+ 25.7	4 21 52.09	− 2.00	74 18 3.8	− 0.5
	9	A Draconis, S. P.		9	27 36.02	+ 0.97	34.66	287 53 39.38	+ 4 6.84	− 3 3.6	16 28 11.65	. .	339 1 3.8	− 0.8
	10	D. M. +1°, 808	9.4	6	37 23.60	− 0.21	34.67	36 57 55.25	+ 3 42.90	+ 45.4	4 37 58.06	− 1.91	88 8 44.8	− 5.8
	11	D. M. +1°, 809	8.0	5	37 26.89	− 0.21	34.67	36 57 55.25	+ 3 25.73	+ 45.4	4 38 1.35	− 1.91	88 8 27.6	− 5.8
	12	α Camelopardalis		8	41 50.25	− 1.09	+ 34.67	332 41 58.72	+ 3 31.93	− 31.0	4 42 23.83	. .	23 51 20.8	− 2.4
	13	Lalande 9258	9.0	6	52 20.22	− 0.88	34.68	338 33 50.88	+ 5 5.92	− 23.6	4 52 54.02	− 3.69	29 44 54.4	+11.1
	14	B. A. C. 1536.		5	52 25.45	− 0.88	34.68	338 33 50.88	+ 3 54.47	− 23.6	4 52 59.25	− 3.69	29 43 43.0	+11.1
	15	Weisse 1296.		7	58 45.63	− 0.20	34.68	37 47 56.10	+ 4 9.00	+ 46.9	4 59 20.11	− 2.01	88 59 13.2	− 7.0
	16	Lalande 10583	8.8	9	31 31.16	− 0.45	+ 34.70	4 21 49.92	+ 4 18.72	+ 4.7	5 32 5.41	− 2.74	55 32 34.5	+ 1.2
	17	Mars I, N.		6	46 20.22	− 0.38	+ 34.71	12 1 54.60	+ 3 17.28	+ 12.9	5 46 54.55	+ 0.54	63 11 46.0	. .
	18	Mars II, S.		5	46 21.24	− 0.38	+ 34.71	12 1 54.60	+ 3 33.05	+ 12.9	5 46 55.57	− 0.48	63 12 1.7	. .
	19	D. M. +17°, 1115	9.6	5	57 42.57	− 0.31	+ 34.72	20 53 45.42	+ 3 39.26	+ 23.1	5 58 16.98	− 2.50	72 4 9.0	− 5.0
	20	Anonymous	10.5	3	57 44.82	− 0.31	+ 34.72	20 53 45.42	+ 1 57.92	+ 23.1	5 58 19.23	− 2.50	72 2 27.6	− 5.0
	21	D. M. +72°, 337	9.5	9	39 52.85	− 1.48	+ 34.75	326 15 46.82	+ 3 40.02	− 40.3	6 40 26.12	− 6.62	17 25 7.7	+ 3.9
	22	O. Arg. N. 7287	8.7	9	45 5.11	− 1.61	+ 34.75	324 41 52.58	+ 5 48.34	− 42.7	6 45 38.25	− 7.16	15 53 19.4	+ 3.6
	23	Weisse (2) 1656	9.1	9	55 57.49	− 0.38	+ 34.76	11 49 50.32	+ 3 13.65	+ 12.7	6 56 31.87	− 2.87	62 59 37.9	− 6.5
	24	D. M. +49°, 1607	9.5	8	5 45.31	− 0.64	+ 34.76	349 31 52.68	+ 4 35.21	− 11.1	7 6 19.43	− 3.68	40 42 38.0	− 2.8
	25	D. M. 49°, 1608	9.8	7	6 2.93	− 0.64	+ 34.77	349 31 52.68	+ 4 11.94	− 11.1	7 6 37.06	− 3.69	40 42 14.7	− 2.8
	26	α² Geminorum		9	26 32.96	− 0.43	+ **34.75**	6 39 58.10	+ 4 54.07	+ 7.2	7 27 7.31	. .	57 51 20.6	− 1.6
	27	α Canis Minoris		8	32 35.48	− 0.23	+ **34.80**	33 17 50.38	+ 3 42.94	+ 39.9	7 33 10.03	. .	84 28 34.4	− 2.5
	28	β Geminorum		9	37 34.23	− 0.40	+ **34.80**	10 31 53.02	+ 3 5.22	+ 11.3	7 38 8.61	. .	61 41 30.7	− 2.7
	29	λ Ursæ Min., S. P.		5	39 39.44	+22.69	+ 34.79	307 47 56.08	+ 3 52.49	− 1 17.9	19 40 36.92	. .	358 56 51.9	− 2.3
	30	3 Ursæ Majoris		9	0 35.42	− 1.22	+ 34.80	330 1 59.65	+ 3 6.86	− 34.9	8 1 9.00	. .	21 10 52.8	− 2.6
	31	γ Cancri (R)			. . .	. .	. .	162 55 52.00	+ 4 4.73	− 18.6	. . .	. .	68 6 43.1	−13.2
	32	γ Cancri			. . .	. .	. .	16 55 43.48	+ 4 17.64	+ 18.6	8 36.5	. .	68 6 40.9	−13.2
W.	33	α Lyræ.		9	32 21.80	− 0.49	+ **34.92**	0 9 46.15	+ 3 29.60	+ 0.2	18 32 56.23	. .	51 19 37.2	− 2.0
	34	δ Draconis.		9	11 54.99	− 1.22	+ **34.92**	331 23 41.50	+ 3 19.07	− 32.9	19 12 28.69	. .	22 32 48.9	− 1.3
	35	α Aquilæ			. . .	. .	. .	30 15 45.15	+ 3 49.95	+ 35.2	19 45.0	. .	81 26 31.5	− 0.9
7	36	Sun I, N.		9	23 34.89	− 0.04	+ 34.92	53 42 0.08	+ 4 20.76	+ 1 20.0	21 24 9.77	+67.43	104 54 2.0	. .
	37	Sun II, S.		9	25 49.76	− 0.04	+ 34.92	54 13 55.10	+ 4 53.79	+ 1 21.6	21 26 24.64	−67.44	105 26 31.7	. .
9, R.	38	α Lyræ.		9	32 20.42	− 0.58	+ **36.47**	0 10 30.78	+ 2 45.69	+ 0.2	18 32 56.26	. .	51 19 37.9	− 2.0
	39	β Lyræ.		9	45 7.20	− 0.48	+ **36.52**	5 36 8.12	+ 3 55.50	+ 5.9	18 45 43.15	. .	56 46 30.7	− 0.9
	40	σ Sagittarii.		8	47 20.80	+ 0.25	+ **36.36**	65 14 6.15	+ 3 47.78	+ 2 8.1	18 47 57.48	. .	116 26 23.2	− 2.4
	41	ζ Aquilæ		8	59 23.07	− 0.21	+ **36.52**	25 8 9.02	+ 3 41.77	+ 27.9	18 59 59.30	. .	76 18 39.9	− 2.4
	42	δ Draconis.		9	11 53.90	− 1.69	+ 36.45	331 24 5.18	+ 2 54.74	− 32.2	19 12 28.66	. .	22 32 48.9	− 2.2
	43	δ Aquilæ		9	18 56.82	− 0.09	+ **36.44**	35 56 5.15	+ 3 57.77	+ 43.0	19 19 33.19	. .	87 7 7.1	− 3.2
	44	γ Aquilæ		9	40 2.87	− 0.17	+ **36.41**	28 30 7.15	+ 3 21.75	+ 32.2	19 40 39.17	. .	79 40 22.3	− 2.4
	45	α Aquilæ		9	44 25.44	− 0.15	+ **36.41**	30 16 4.42	+ 3 30.19	+ 34.6	19 45 1.76	. .	81 26 30.4	− 2.3
	46	ε Draconis.		4	47 56.09	− 1.93	+ 36.48	328 52 7.82	+ 4 3.63	− 35.6	19 48 30.64	. .	20 1 57.0	− 2.1
	47	Venus II, C.		9	28 21.79	+ 0.13	+ 36.55	55 22 0.00	+ 4 36.48	+ 1 25.6	21 28 58.47	− 0.35	106 34 23.3	. .
10	48	Sun I, N.		9	35 27.48	+ 0.10	+ 36.55	52 46 3.82	+ 2 33.71	+ 1 17.7	21 36 4.13	+67.10	103 56 16.4	. .
	49	Sun II, S.		9	37 41.69	+ 0.10	+ 36.55	53 18 2.92	+ 3 1.16	+ 1 19.2	21 38 18.34	−67.11	104 28 44.5	. .
	50	ζ Pegasi		5	34 58.38	− 0.17	+ **36.59**	28 36 4.80	+ 4 2.92	+ 32.2	22 35 34.80	. .	79 47 1.1	+ 2.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*			No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°					′ ″	′ ″	″	′ ″
3	30.28	43.5	41.2			ZENITH-POINT CORR.	1	— 0.7	— 18.9	.	— 19.6
15	30.29	40.8	38.0				17	— 2.2	+ 7.9	.	+ 5.7
26	30.27	38.2	35.2			″	18	— 2.2	— 7.8	0.0	— 10.0
32	30.25	36.7	33.8	1, 32, 50.	One bisection.		36	— 7.2	+ 16 14.9	.	+ 16 7.7
33	30.21	32.0	30.7	41.	Three bisections.	1 to 32 + 57.97	37	— 7.3	— 16 1.8	.	— 16 22.1
37	30.13	43.0	48.6	21, 22, 26, 27, 33, 38,	Four bisections.		47	— 4.3	. .	0.0	— 4.3
38	29.96	39.8	41.2	42, 45, 47.		33 to 37 + 53.86	48	— 7.1	+ 16 14.1	.	+ 16 7.0
43	29.98	41.4	42.2	29.	Five bisections.	38 to 50 + 51.23	49	— 7.2	— 16 14.0	.	— 16 21.2
46	29.99	42.2	42.7								
49	30.01	43.4	44.0								

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
February					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
10, R.	1	Mercury I, C.		9	39 43.01	+ 0.02	+ 36.60	45 24 4.35	+ 4 6.65	+ 59.9	22 40 19.63	+ 0.27	96 35 32.1	. .
	2	ι Cephei		9	44 52.43	— 1.55	+ 36.60	333 16 1.38	+ 3 5.12	— 29.6	22 45 27.48	. .	24 24 58.1	— 0.6
	3	α Pegasi		9	58 16.80	— 0.22	+ **36.64**	24 16 4.00	+ 2 48.20	+ 26.7	22 58 53.19	. .	75 25 40.1	— 0.2
	4	θ Piscium		8	21 22.77	— 0.12	+ **36.60**	33 6 2.95	+ 3 4.99	+ 38.6	23 21 59.28	. .	84 16 7.7	+ 2.9
	5	γ Cephei		8	33 54.60	— 3.04	+ 36.63	321 52 5.65	+ 3 34.27	— 46.3	23 34 28.19	. .	13 1 14.8	— 1.3
	6	Weisse (2) 1421[1]	6.8	4	1 46.66	— 0.33	+ 36.61	10 56 3.40	+ 4 36.33	+ 11.7	5 2 22.94	— 2.36	62 7 12.6	+ 1.1
	7	Weisse (2) 1421[2]	8.2	4	1 47.18	— 0.33	+ 36.61	10 56 3.40	+ 4 25.64	+ 11.7	5 2 23.46	— 2.36	62 7 1.9	+ 1.1
	8	B. VI + 62°, 742		6	8 50.21	— 1.22	+ 36.61	336 18 4.70	+ 4 20.48	— 26.4	5 9 25.60	— 3.91	27 28 20.0	+10.6
	9	β Tauri (R)		.	. . .	. .	. .	169 34 4.70	+ 2 50.38	— 11.1	. . .	. .	61 29 37.2	0.0
	10	β Tauri		.	. . .	. .	. .	10 18 6.18	+ 4 58.19	+ 11.1	5 18.9	. .	61 29 36.7	— 0.5
	11	B. A. C. 1753		9	28 18.79	+ 0.41	+ 36.63	74 0 8.25	+ 3 36.20	+ 3 28.9	5 28 55.83	— 1.79	125 13 34.5	—17.2
	12	Lalande 10597		9	32 2.08	— 0.43	+ 36.63	4 22 5.78	+ 2 30.08	+ 4.7	5 32 38.28	— 2.68	55 31 1.8	+ 1.2
	13	D. M. + 31°, 1126	9.5	9	44 16.97	— 0.38	+ 36.63	7 4 3.00	+ 4 9.11	+ 7.6	5 44 53.22	— 2.67	58 14 40.9	— 0.4
	14	Mars I, N.		6	47 39.65	— 0.31	+ 36.64	12 6 3.12	+ 3 37.16	+ 13.0	5 48 15.98	+ 0.57	63 16 14.5	. .
	15	Mars II, S.		5	47 40.72	— 0.31	+ 36.64	12 6 3.12	+ 3 50.47	+ 13.0	5 48 17.05	— 0.50	63 16 27.8	. .
	16	ν Orionis		9	0 16.06	— 0.16	+ **36.65**	24 2 7.52	+ 4 17.34	+ 27.1	6 0 52.54	. .	75 13 13.2	— 0.8
	17	22 Camelop.		9	5 20.94	— 1.70	+ 36.65	329 30 4.62	+ 2 30.52	— 35.6	6 5 55.89	. .	20 38 20.7	— 1.0
	18	δ Ursæ Min., S. P.		7	9 12.03	+11.14	+ 36.65	305 28 5.32	+ 3 22.41	— 1 24.7	18 9 59.82	. .	356 36 24.2	— 0.3
	19	D. M. + 72°, 325	9.3	9	24 34.63	— 2.05	+ 36.66	326 14 2.72	+ 4 45.28	— 40.4	6 25 9.24	— 6.33	17 24 28.8	+ 6.1
	20	γ Geminorum		9	30 19.81	— 0.18	+ **36.64**	22 20 7.25	+ 3 16.81	+ 25.0	6 30 56.29	. .	73 30 10.3	— 2.0
	21	D. M. + 72°, 337	9.5	9	39 51.78	— 2.05	+ 36.66	326 16 2.05	+ 3 25.31	— 40.4	6 40 26.39	— 6.45	17 25 8.2	+ 4.7
	22	O. Arg. N. 7287		9	45 3.62	— 2.26	+ 36.67	324 42 8.82	+ 5 32.72	— 42.8	6 45 38.03	— 6.98	15 53 19.9	+ 4.4
	23	B. A. C. 2288		8	52 29.56	+ 0.42	+ 36.67	74 8 7.00	+ 3 20.93	+ 3 31.6	6 53 6.65	— 2.28	125 21 20.7	—17.6
	24	Stone 3320	7.2	8	52 47.01	+ 0.42	+ 36.67	74 8 7.00	+ 0 45.88	+ 3 31.1	6 53 24.10	— 2.28	125 18 45.2	—17.6
	25	B. A. C. 2315		9	56 58.51	+ 0.42	+ 36.67	74 8 7.00	+ 5 1.56	+ 3 32.1	6 57 35.60	— 2.31	125 23 1.9	—17.6
	26	63 Aurigæ		9	2 59.39	— 0.52	+ 36.68	359 18 5.02	+ 4 55.52	— 0.7	7 3 35.55	— 3.20	50 29 21.0	— 4.1
	27	δ Geminorum		5	12 30.88	— 0.25	+ **36.68**	16 38 6.55	+ 3 27.85	+ 18.2	7 13 7.31	. .	67 48 13.8	— 1.1
	28	B. A. C. 2446		9	17 30.79	+ 0.36	+ 36.69	70 32 7.30	+ 8 9.02	+ 2 52.0	7 18 7.84	— 2.40	121 49 29.5	—17.2
	29	B. A. C. 2449		8	17 55.36	+ 0.36	+ 36.60	70 32 7.30	+ 0 46.80	+ 2 50.8	7 18 32.41	— 2.40	121 42 6.1	—17.2
	30	Weisse (2) 704	6.8	6	25 12.73	— 0.26	+ 36.69	15 42 9.48	+ 3 4.43	+ 17.2	7 25 49.16	— 2.82	66 51 52.3	— 9.1
	31	Weisse (2) 703	9.0	5	25 12.77	— 0.26	+ 36.69	15 42 9.48	+ 3 15.98	+ 17.2	7 25 49.20	2.82	66 52 3.9	— 9.1
	32	Stone 3761	7.5	9	32 32.29	+ 0.43	+ 36.69	74 58 8.10	+ 1 13.99	+ 3 43.8	7 33 9.41	— 2.49	126 9 27.1	—17.3
	33	B. A. C. 2536		9	33 52.83	+ 0.43	+ 36.69	74 58 8.10	+ 5 44.53	+ 3 44.8	7 34 29.95	— 2.49	126 13 58.6	—17.3
	34	Groom. 1361.	7.3	8	40 28.17	— 3.01	+ 36.70	320 56 4.72	+ 5 38.77	— 49.3	7 41 1.86	— 9.02	12 7 15.4	— 0.6
	35	φ Geminorum		4	45 43.04	— 0.32	+ **36.72**	11 46 2.42	+ 3 20.44	+ 12.8	7 46 19.42	. .	62 55 56.9	— 0.8
	36	Lalande 15548	7.8	8	52 7.13	— 0.27	+ 36.70	15 22 6.25	+ 1 17.21	+ 16.8	7 52 43.56	— 2.87	66 30 1.5	—10.6
	37	Lalande 15551	9.1	5	52 11.48	— 0.27	+ 36.70	15 22 6.25	+ 7 1.12	+ 16.9	7 52 47.91	— 2.87	66 35 45.5	—10.6
	38	Iris		9	3 15.67	— 0.14	+ 36.71	25 52 6.75	+ 2 31.83	+ 29.6	8 3 52.24	. .	77 1 29.4	— 3.0
	39	Anonymous	9.6	8	12 43.68	+ 0.36	+ 36.71	70 28 4.62	+ 1 52.02	+ 2 50.9	8 13 20.75	— 2.62	121 39 8.7	—16.5
	40	η Cancri		9	25 19.38	— 0.24	+ **36.80**	17 58 4.70	+ 4 56.54	+ 19.9	8 25 55.86	. .	69 9 42.3	— 3.1
	41	Amphitrite		9	49 17.12	— 0.29	+ 36.74	14 2 6.68	+ 2 57.01	+ 15.3	8 49 53.57	. .	65 11 40.2	— 1.4
	42	κ Cancri		9	0 47.53	— 0.12	+ **36.69**	27 40 6.45	+ 4 41.45	+ 32.2	9 1 24.15	. .	78 51 41.3	— 1.7
	43	θ Hydræ		9	7 39.53	— 0.03	+ 36.75	36 0 6.88	+ 4 19.81	+ 44.5	9 8 16.25	— 2.69	87 11 32.4	—15.5
	44	1 Draconis		8	19 48.78	— 4.54	+ 36.75	317 0 6.48	+ 3 52.49	— 56.9	9 20 20.99	. .	8 9 23.3	— 1.7
	45	α Hydræ		9	21 13.20	+ 0.08	+ **36.73**	46 58 4.40	+ 3 35.91	+ 1 5.6	9 21 50.03	. .	98 9 7.1	— 0.9
	46	ε Leonis		9	38 35.52	— 0.28	+ **36.75**	14 30 8.62	+ 4 28.16	+ 15.9	9 39 12.00	. .	65 41 13.9	1.6
	47	Melpomene		9	1 5.02	— 0.12	+ 36.78	27 58 5.32	+ 2 22.81	+ 32.6	10 1 41.68	. .	79 7 21.9	— 2.6
	48	9 Draconis (R)		.	. . . .	. .	. .	217 22 8.02	+ 2 21.72	+ 46.8	. . . .	. .	13 41 4.7	+ 0.2
	49	9 Draconis		8	24 33.99	— 2.65	+ 36.79	322 32 7.78	+ 3 21.08	— 46.8	10 25 8.13	. .	13 41 3.3	— 1.2
	50	Psyche		1	31 48.16	— 0.10	+ 36.79	29 32 8.02	+ 2 20.75	+ 34.8	10 32 24.85	. .	80 41 24.8	— 1.9

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
2	30.04	44.7	45.0
5	30.10	44.1	44.0
10	30.28	38.5	37.2
26	30.33	37.4	34.7
40	30.36	36.2	33.0

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

				″
5, 18, 19, 21, 34, 44.	Three bisections.	1 to 5	+	51.23
1, 3, 16, 17, 22, 38, 40, 47.	Four bisections.	6 to 50	+	52.22

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	″
1	— 7.4	. .	— 0.9	— 8.3
14	— 2.2	+ 6.7	.	+ 4.5
15	— 2.2	— 6.6	0.0	— 8.8

5. Barometer and thermometers read at $0^h\ 14^m$

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
February 10, R.	1	ι Leonis		9	42 29.21	− 0.12	+ 36.81	27 40 6.12	+ 3 7.03	+ 32.2	10 43 5.89	. .	78 50 6.6	− 1.7
	2	Concordia		3	51 3.48	− 0.07	+ 36.80	32 36 4.78	+ 1 50.81	+ 39.3	10 51 40.21	. .	83 44 56.1	− 2.9
	3	Uranus I, C.		6	14 46.53	− 0.06	+ 36.82	33 8 5.32	+ 4 11.02	+ 40.2	11 15 23.29	+ 0.22	84 19 17.7	. .
	4	Uranus II		5	14 46.98	− 0.06	+ 36.82	33 8 . .	. . .	. .	11 15 23.74	− 0.23	. . . .	. .
	5	ε Bootis (R)			. . . .	. .	. .	168 38 8.38	+ 2 26.59	− 12.3	. . . .	. .	62 25 58.5	− 0.5
	6	ε Bootis			. . . .	. .	. .	11 16 5.32	+ 3 17.50	+ 12.3	14 39.9	. .	62 25 56.3	− 2.7
	7	α^2 Libræ		6	43 45.92	+ 0.20	+ 36.74	54 22 8.60	+ 3 9.67	+ 1 25.5	14 44 22.97	. .	105 33 5.0	− 2.7
	8	β Ursæ Minoris		9	50 28.77	− 2.17	+ 36.85	324 12 3.62	+ 4 26.55	− 44.1	14 51 3.45	. .	15 22 7.3	− 1.4
	9	β Bootis		9	56 54.77	− 0.47	+ 36.85	357 58 8.55	+ 4 27.13	− 2.1	14 57 31.15	. .	49 8 54.8	− 3.1
	10	48 Cephei, S. P.		9	4 47.93	+ 2.83	+ 36.85	296 10 6.45	+ 3 51.43	− 2 4.0	3 5 27.61	. .	347 18 15.1	− 1.9
	11	β Libræ		9	10 4.12	+ 0.13	+ 36.78	47 44 2.52	+ 5 20.74	+ 1 7.7	15 10 41.10	. .	98 56 52.2	− 2.4
	12	μ^1 Bootis		7	19 26.48	− 0.42	+ 36.85	1 2 11.78	+ 4 14.48	+ 1.2	15 20 2.92	. .	52 12 48.7	− 1.3
	13	Moon II, S.		9	25 41.92	+ 0.26	+ 36.86	59 38 8.02	+ 3 8.70	+ 1 44.7	15 26 19.04	−68.43	110 49 22.6	. .
	14	α Serpentis		9	37 51.74	− 0.03	+ 36.89	32 2 9.38	+ 3 8.20	+ 38.5	15 38 28.57	. .	83 12 17.3	− 2.0
	15	ε Serpentis		9	44 20.34	− 0.01	+ 36.96	34 0 6.05	+ 2 57.24	+ 41.5	15 44 57.19	. .	85 10 6.0	− 2.1
	16	ζ Ursæ Minoris		9	47 41.29	− 2.87	+ 36.86	320 42 8.75	+ 3 15.50	− 50.2	15 48 15.28	. .	11 50 55.2	− 2.3
	17	δ Scorpii		9	52 45.72	+ 0.28	+ 36.93	61 6 3.18	+ 2 46.74	+ 1 51.3	15 53 22.87	. .	112 17 2.4	− 2.6
	18	Groom. 2320 (R)			. . . .	. .	. .	209 10 9.12	+ 2 31.94	+ 34.4	. . . .	. .	21 53 5.7	+ 0.7
	19	Groom. 2320		7	5 23.82	− 1.47	+ 36.87	330 44 0.48	+ 3 16.80	− 34.4	16 5 59.22	. .	21 53 4.1	− 0.9
W.	20	α Lyræ		9	32 19.97	− 0.47	+ 36.83	0 10 6.30	+ 3 10.33	+ 0.2	18 32 56.40	. .	51 19 38.0	− 2.2
	21	β Lyræ		9	45 6.80	− 0.38	+ 36.85	5 36 3.35	+ 3 59.07	+ 6.1	18 45 43.29	. .	56 46 29.7	− 2.1
	22	γ Lyræ		9	53 55.11	− 0.37	+ 36.86	6 18 5.82	+ 3 48.34	+ 6.8	18 54 31.60	+ 0.17	57 28 22.2	− 6.0
	23	ζ Aquilæ		9	59 22.61	− 0.14	+ 36.93	25 8 5.92	+ 3 45.38	+ 28.8	18 59 59.32	. .	76 18 41.3	− 1.2
	24	δ Draconis		9	11 53.47	− 1.46	+ 36.82	331 24 2.40	+ 2 59.77	− 33.3	19 12 28.83	. .	22 32 50.1	− 1.3
	25	δ Aquilæ		6	18 56.50	− 0.02	+ 36.71	35 56 2.05	+ 4 0.40	+ 44.4	19 19 33.29	. .	87 7 8.0	− 2.4
	26	B. A. C. 6690		9	25 21.13	− 0.30	+ 36.80	11 8 8.72	+ 2 34.89	+ 12.1	19 25 57.63	+ 0.13	62 17 16.9	− 3.3
	27	γ Aquilæ		9	40 2.41	− 0.10	+ 36.82	28 30 9.52	+ 3 20.55	+ 33.3	19 40 39.08	. .	79 40 24.6	− 0.2
	28	δ Cygni			. . . .	. .	. .	354 0 6.92	+ 3 5.50	− 6.4	19 41.3	. .	45 9 27.2	− 3.2
	29	α Aquilæ		3	44 24.99	− 0.08	+ 36.81	30 16 1.82	+ 3 32.75	+ 35.7	19 45 1.67	. .	81 26 31.5	− 1.3
11	30	Sun I, N.		9	39 23.84	+ 0.14	+ 36.55	52 26 3.82	+ 2 53.80	+ 1 18.9	21 40 0.53	+66.98	103 36 37.7	. .
	31	Sun II, S.		9	41 37.79	+ 0.14	+ 36.56	52 58 4.08	+ 3 18.14	+ 1 20.4	21 42 14.49	−66.98	104 9 3.8	. .
14, W.	32	α Lyræ		9	32 18.94	− 0.59	+ 38.10	0 10 18.15	+ 2 58.83	+ 0.2	18 32 56.57	. .	51 19 38.4	− 2.5
	33	β Lyræ		9	45 5.54	− 0.46	+ 38.29	5 36 9.52	+ 3 53.18	+ 6.0	18 45 43.31	. .	56 46 29.9	− 2.8
	34	σ Sagittarii		3	47 18.84	+ 0.50	+ 38.21	65 14 12.82	+ 3 37.08	+ 2 10.2	18 47 57.57	. .	116 26 21.3	− 4.1
	35	γ Lyræ		9	53 53.84	− 0.44	+ 38.23	6 18 11.00	+ 3 42.68	+ 6.7	18 54 31.63	+ 0.06	57 28 21.6	− 6.7
	36	ζ Aquilæ		9	59 21.31	− 0.10	+ 38.28	25 8 6.25	+ 3 44.82	+ 28.3	18 59 59.44	. .	76 18 40.6	− 2.5
	37	δ Draconis		9	11 52.93	− 2.04	+ 38.24	331 24 3.30	+ 2 58.13	− 32.7	19 12 29.13	. .	22 32 49.9	− 2.6
	38	α Aquilæ		8	44 23.53	− 0.02	+ 38.28	30 16 7.35	+ 3 26.65	+ 35.9	19 45 1.76	. .	81 26 30.2	− 3.1
15	39	Sun I, N.		9	55 1.27	+ 0.28	+ 38.32	51 4 9.82	+ 3 43.64	+ 1 12.8	21 55 39.87	+66.60	102 15 27.5	. .
	40	Sun II, S.		9	57 14.46	+ 0.28	+ 38.32	51 36 10.95	+ 4 7.69	+ 1 14.2	21 57 53.06	−66.59	102 47 54.0	. .
	41	Mercury I, S.		9	38 12.61	+ 0.18	+ 38.34	44 12 7.72	+ 3 24.40	+ 56.8	22 38 51.13	+ 0.30	95 22 50.1	. .
	42	ι Cephei		9	44 51.34	− 1.86	+ 38.34	333 16 8.35	+ 2 58.88	− 29.3	22 45 27.82	. .	24 24 58.1	− 2.1
	43	α Piscis Australis		9	50 28.80	+ 0.56	+ 38.31	69 2 4.42	+ 3 50.18	+ 2 31.3	22 51 7.70	. .	120 14 47.1	− 2.1
	44	α Pegasi		9	58 14.93	− 0.12	+ 38.41	24 16 4.50	+ 2 48.05	+ 26.3	22 58 53.16	. .	75 25 40.1	− 0.9
	45	ι Piscium		3	33 14.71	+ 0.03	+ 38.46	33 50 8.20	+ 3 33.97	+ 38.8	23 33 53.10	. .	85 0 42.2	− 1.7
	46	ω Piscium		9	52 37.18	+ 0.01	+ 38.34	32 36 5.80	+ 4 15.56	+ 37.1	23 53 15.56	. .	83 47 19.7	− 0.6
	47	γ Andromedæ		9	1 39.82	− 0.36	+ 38.31	10 24 1.05	+ 2 58.69	+ 10.7	0 2 17.84	. .	61 33 31.6	+ 0.2
	48	Pegasi		9	6 31.82	− 0.12	+ 38.36	24 18 4.08	+ 3 24.05	+ 26.2	0 7 10.08	. .	75 28 15.5	− 0.1
	49	Lalande 11040		9	43 31.23	− 0.40	+ 38.32	7 54 2.42	+ 4 6.52	+ 8.2	5 44 9.15	− 2.60	59 4 38.3	0.4
	50	α Orionis		9	48 10.94	0.00	+ 38.28	31 26 6.65	+ 4 1.62	+ 36.1	5 48 49.26	. .	82 37 5.6	− 0.9

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
2	30.39	34.8	31.7
4	30.40	34.7	31.4
5	30.45	34.2	32.8
12	30.48	34.4	32.6
18	30.49	33.8	31.6
20	30.60	35.6	34.8
31	30.62	40.8	40.6
32	30.22	38.0	36.6
40	30.23	48.5	50.0
45	30.22	55.4	57.5
48	30.22	57.2	57.3
49	30.22	49.4	48.4

For summary of the constants of reduction see page 3.

		ZENITH-POINT CORR.
		″
2.	One bisection.	1 to 3 + 52.22
16.	Three bisections.	5 to 19 + 51.62
1, 3, 8, 10, 14, 20, 32, 41, 44, 47,	Four bisections.	20 to 31 + 53.78
13.	Five bisections.	32 to 48 + 46.22
		49 to 50 + 42.12

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
3	− 0.3	. .	.	− 0.3
13	− 48 51.4	− 15 29.7	.	− 64 21.1
30	− 7.1	+ 16 13.1	.	+ 16 6.0
31	− 7.1	− 16 13.0	.	− 16 20.1
39	− 6.9	+ 16 13.2	.	+ 16 6.3
40	− 7.0	− 16 13.2	.	− 16 20.2
41	− 8.5	− 4.6	.	− 13.1

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
February 15, W.	1	Mars I, N.		6	50 26.00	− 0.32	+ 38.32	12 12 10.45	+ 3 4.07	+ 12.8	5 51 4.00	+ 0.47	63 21 48.5	. .
	2	Mars II, S.		5	50 26.87	− 0.32	+ 38.32	12 12 10.45	+ 3 17.78	+ 12.8	5 51 4.87	− 0.40	63 22 2.2	. .
	3	ν Orionis		9	0 14.22	− 0.12	**+ 38.39**	24 2 7.78	+ 4 18.29	+ 26.4	6 0 52.42	. .	75 13 13.7	− 0.4
	4	Weisse (2) 26		9	4 1.27	− 0.44	+ 38.32	6 6 6.45	+ 4 23.53	+ 6.4	6 4 39.15	− 2.74	57 16 57.6	− 1.2
	5	δ Ursæ Min., S. P.		5	9 7.77	+15.69	+ 38.32	305 28 2.05	+ 3 23.02	− 1 22.4	18 10 1.78	. .	356 36 23.9	+ 0.5
	6	μ Geminorum		9	15 13.80	− 0.25	**+ 38.33**	16 16 6.08	+ 2 58.49	+ 17.3	6 15 51.87	. .	67 25 43.1	− 0.2
	7	B. A. C. 2129		9	26 18.38	− 0.11	+ 38.32	24 34 6.82	+ 4 32.18	+ 27.1	6 26 56.59	− 2.48	75 45 27.3	− 7.9
	8	γ Geminorum		9	30 18.07	− 0.14	**+ 38.28**	22 20 10.98	+ 3 14.45	+ 24.3	6 30 56.25	. .	73 30 10.9	− 1.5
	9	B. A. C. 2212		9	38 50.22	+ 0.75	+ 38.32	77 50 11.60	+ 3 47.48	+ 4 28.9	6 39 29.29	− 2.14	129 4 49.2	−19.2
	10	51 Cephei		5	44 59.28	−18.77	+ 38.32	311 38 9.78	+ 2 49.76	− 1 6.3	6 45 18.83	. .	2 46 14.4	− 0.5
	11	B. A. C. 2305 (R)		.	. . . .	. . .	. . .	161 48 12.25	+ 2 52.16	− 19.4	. . . .	. .	69 15 36.2	− 7.8
	12	B. A. C. 2305		.	. . . .	. . .	. . .	18 4 7.15	+ 4 48.63	+ 19.4	6 57.1	. .	69 15 36.4	− 7.8
	13	B. A. C. 2462 (R)		.	. . . .	. . .	. . .	149 36 11.80	+ 2 7.01	− 34.6	. . . .	. .	81 28 37.0	−11.8
	14	B. A. C. 2462		.	. . . .	. . .	. . .	30 18 7.68	+ 3 30.99	+ 34.6	7 20.8	. .	81 28 34.5	−11.8
	15	B. A. C. 2543		9	34 41.33	+ 0.72	+ 38.32	76 46 10.55	+ 5 54.11	+ 4 8.7	7 35 20.37	− 2.47	128 2 34.6	−18.7
	16	B. A. C. 2546		7	35 1.55	+ 0.72	+ 38.32	76 46 10.55	+ 2 59.62	+ 4 7.8	7 35 40.59	− 2.47	127 59 39.2	−18.7
	17	B. A. C. 2575		9	39 45.61	+ 0.72	+ 38.32	76 24 12.68	+ 5 15.75	+ 4 1.8	7 40 24.65	− 2.49	127 39 51.4	−18.6
	18	Lacaille 2956		8	40 15.80	+ 0.72	+ 38.32	76 24 12.68	+ 1 52.10	+ 4 0.8	7 40 54.84	− 2.49	127 36 26.8	−18.6
	19	φ Geminorum		7	45 41.38	− 0.33	**+ 38.36**	11 46 11.12	+ 3 11.34	+ 12.4	7 46 19.37	. .	62 55 56.1	− 1.3
	20	B. A. C. 2655		9	52 21.58	+ 0.56	+ 38.32	68 48 12.32	+ 4 15.14	+ 2 32.2	7 53 0.46	− 2.52	120 1 20.9	−18.0
	21	15 Argus		9	1 54.96	+ 0.46	**+ 38.24**	62 46 11.30	+ 3 42.09	+ 1 55.0	8 2 33.74	. .	113 58 9.6	− 1.6
	22	D. M. +36°, 1782		6	9 16.93	− 0.53	+ 38.32	2 6 9.95	+ 2 49.33	+ 2.2	8 9 54.72	− 3.22	53 15 22.7	− 9.2
	23	D. M. +36°, 1783		5	9 18.83	− 0.53	+ 38.32	2 6 9.95	+ 3 22.42	+ 2.2	8 9 56.62	− 3.22	53 15 55.8	− 9.2
	24	B. A. C. 2819 (R)		.	. . . .	. . .	. . .	202 10 8.98	+ 2 21.27	+ 24.2	. . . .	. .	28 53 26.8	− 6.0
	25	B. A. C. 2819		.	. . . .	. . .	. . .	337 44 6.32	+ 3 22.28	− 24.2	8 20.5	. .	28 53 25.6	− 6.0
	26	η Cancri		9	25 17.80	− 0.22	**+ 38.36**	17 58 12.05	+ 4 50.33	+ 19.3	8 25 55.90	. .	69 9 42.9	− 2.4
	27	ε Hydræ		9	39 56.02	0.00	**+ 38.31**	31 58 12.40	+ 3 59.17	+ 37.2	8 40 34.34	. .	83 9 10.0	− 2.2
	28	ι Ursæ Majoris		9	50 33.79	− 0.88	+ 38.32	350 20 10.40	+ 3 33.01	− 10.1	8 51 11.23	. .	41 29 54.5	− 2.1
16, S.	29	ζ Aquilæ		9	59 21.12	− 0.12	**+ 38.53**	25 8 19.68	+ 3 34.51	+ 27.3	18 59 59.50	. .	76 18 42.7	− 0.7
	30	δ Draconis		9	11 52.94	− 2.52	+ 38.50	331 24 14.05	+ 2 47.01	− 31.6	19 12 28.92	. .	22 32 50.7	− 2.3
	31	δ Aquilæ		9	18 54.73	+ 0.08	**+ 38.50**	35 56 16.95	+ 3 48.52	+ 42.1	19 19 33.32	. .	87 7 8.8	− 2.1
	32	α Aquilæ		9	44 23.37	− 0.03	**+ 38.49**	30 16 16.82	+ 3 20.68	+ 33.9	19 45 1.85	. .	81 26 32.6	− 0.9
17	33	Sun I, S.		9	2 46.32	+ 0.34	+ 38.54	50 54 12.72	+ 4 20.98	+ 1 11.2	22 3 25.20	+66.33	102 6 6.1	. .
	34	Sun II, N.		9	4 58.98	+ 0.34	+ 38.54	50 22 11.70	+ 4 1.78	+ 1 9.9	22 5 37.86	−66.33	101 33 44.6	. .
	35	α Pegasi		9	58 14.81	− 0.14	**+ 38.55**	24 16 13.28	+ 2 42.03	+ 26.1	22 58 53.22	. .	75 25 42.6	+ 1.4
	36	B. A. C. 1536 (R)		.	. . . .	. . .	. . .	201 18 5.88	+ 4 7.74	+ 23.1	. . . .	. .	29 43 44.5	+11.9
	37	B. A. C. 1536		.	. . . .	. . .	. . .	338 34 5.92	+ 3 42.89	− 23.1	4 52.9	. .	29 43 46.9	+11.9
	38	α Orionis		9	49 11.20	+ 0.09	**− 22.10**	31 26 3.25	+ 4 3.11	+ 36.3	5 48 49.20	. .	82 37 3.9	− 2.7
	39	Mars I, S.		6	52 52.63	− 0.28	− 22.09	12 14 5.68	+ 3 36.14	+ 12.9	5 52 30.26	+ 0.48	63 24 15.9	. .
	40	Mars II, N.		5	52 53.51	− 0.28	− 22.09	12 14 5.68	+ 3 24.09	+ 12.9	5 52 31.14	− 0.40	63 24 3.9	. .
	41	ν Orionis		9	1 14.56	− 0.04	**− 22.06**	24 2 9.18	+ 4 14.95	+ 26.5	6 0 52.43	. .	75 13 11.8	− 2.4
	42	Weisse 272		9	11 47.20	− 0.04	− 22.10	24 24 3.42	+ 3 43.32	+ 27.0	6 11 25.06	− 2.39	75 34 34.9	− 7.0
	43	Lal. 12148 (*med.*)		9	16 21.90	− 0.09	− 22.10	21 10 5.80	+ 5 23.80	+ 23.1	6 15 59.71	− 2.46	72 22 13.9	− 6.3
	44	B. A. C. 2129		9	27 18.77	− 0.03	− 22.10	24 34 3.62	+ 4 33.05	+ 27.3	6 26 56.64	− 2.46	75 45 25.2	− 7.8
	45	B. A. C. 2183		9	33 45.92	+ 0.82	− 22.11	71 0 9.52	+ 5 18.21	+ 2 52.0	6 33 24.63	− 2.08	122 14 40.9	−18.6
	46	B. A. C. 2212		9	39 50.26	+ 0.98	− 22.11	77 50 7.78	+ 3 46.81	+ 4 31.2	6 39 29.13	− 2.10	129 4 47.0	−19.5
	47	O. Arg. N. 7479		9	55 16.27	− 1.06	− 22.12	347 22 10.38	+ 4 23.92	− 13.3	6 54 53.09	− 3.66	38 32 42.2	+ 0.2
	48	B. A. C. 2335		8	2 22.71	+ 0.96	− 22.12	76 58 8.28	+ 3 42.43	+ 4 13.8	7 2 1.55	− 2.25	128 12 25.7	−19.4
	49	B. A. C. 2385		9	9 38.53	+ 0.79	− 22.12	69 40 9.98	+ 3 58.96	+ 2 40.5	7 9 17.20	− 2.29	120 53 10.6	−18.6
	50	δ Geminorum		9	13 29.58	− 0.19	**− 22.14**	16 38 8.95	+ 3 26.91	+ 17.9	7 13 7.27	. .	67 48 15.0	+ 0.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*				No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°						′ ″	′ ″	″	′ ″
19	30.22	46.7	45.7			ZENITH-POINT CORR.		1	− 2.1	+ 6.9	.	+ 4.8
28	30.21	45.9	43.6					2	− 2.1	− 6.8	0.0	− 8.9
29	30.09	52.8	54.0				″	33	− 6.9	− 16 10.7	.	− 16 17.6
34	30.20	55.9	57.3	12, 14, 19	One bisection.	1 to 28	+ 42.12	34	− 6.9	+ 16 10.8	.	+ 16 3.9
35	30.19	56.9	57.8	5, 10	Three bisections.	29 to 35	+ 43.63	39	− 2.0	− 6.0	0.0	− 8.0
37	30.33	52.0	50.2	29, 31	Four bisections.	36 to 50	+ 45.83	40	− 2.0	+ 6.0	.	+ 4.0
46	30.39	49.0	45.8									

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
February 17, S.	1	Stone 3672		6	24 42.98	+ 0.80	— 22.13	70 22 5.82	+ 5 22.91	+ 2 47.0	7 24 21.65	— 2.36	121 36 36.9	—18.7
	2	Stone 3673		5	24 43.61	+ 0.80	— 22.13	70 22 5.82	+ 5 18.47	+ 2 47.0	7 24 22.28	— 2.36	121 36 32.5	—18.7
	3	λ Ursæ Min., S. P.		5	40 6.14	+58.05	— 22.14	307 48 4.38	+ 3 41.68	— 1 16.9	19 40 42.05	. .	358 56 50.4	— 0.8
	4	φ Geminorum		9	46 41.81	— 0.29	**— 22.12**	11 46 6.18	+ 3 15.01	+ 12.5	7 46 19.38	. .	62 55 54.9	— 2.4
	5	κ Cephei, S. P.		9	13 2.04	+ 5.05	— 22.15	296 14 4.42	+ 2 54.28	— 2 1.4	20 12 44.94	. .	347 21 18.5	— 0.1
	6	O. Arg. N. 9001		9	21 33.67	— 1.04	— 22.15	347 46 8.50	+ 4 26.59	— 13.0	8 21 10.48	— 3.82	38 56 43.3	— 7.2
	7	O. Arg. N. 9029		9	23 32.58	— 1.04	— 22.16	347 46 8.50	+ 1 38.27	— 13.0	8 23 9.38	— 3.82	38 53 55.0	— 7.4
	8	O. Arg. N. 9125		9	30 40.07	— 1.04	— 22.16	347 46 8.50	+ 3 20.60	— 13.0	8 30 16.87	— 3.82	38 55 37.3	— 8.0
	9	O. Arg. N. 9210		9	34 11.91	— 1.04	— 22.16	347 46 8.50	+ 3 29.81	— 13.0	8 33 48.71	— 3.82	38 55 46.5	— 8.3
	10	Amphitrite		9	43 41.81	— 0.24	— 22.16	13 59 9.20	+ 2 55.04	+ 15.1	8 43 19.41	. .	65 8 40.5	— 1.3
	11	σ^{d} Ursæ Majoris		9	0 29.42	— 2.29	— 22.17	331 14 2.95	+ 3 31.88	— 33.2	9 0 4.96	. .	22 23 22.8	— 1.6
	12	B. A. C. 3162		9	11 55.93	— 0.55	— 22.18	1 32 9.15	+ 3 35.06	+ 1.7	9 11 33.20	— 3.24	52 42 7.1	—13.2
	13	α Hydræ		9	22 11.88	+ 0.36	**— 22.20**	46 58 7.72	+ 3 30.53	+ 1 5.0	9 21 50.06	. .	98 9 4.4	— 4.7
	14	ο Leonis (R)		.	. . . .	. .	. .	151 30 11.60	+ 2 4.37	— 32.9	. . . . .	. .	79 34 38.1	—16.5
	15	ο Leonis		.	. . . .	. .	. .	28 24 3.10	+ 3 32.09	+ 32.9	9 34.9	. .	79 34 29.3	—16.5
	16	μ Leonis		9	46 28.48	— 0.28	**— 22.20**	12 16 7.15	+ 3 47.85	+ 13.3	9 46 6.01	. .	63 26 29.5	— 3.3
W.	17	γ Aquilæ		9	41 1.58	+ 0.13	**— 22.45**	28 30 11.10	+ 3 18.38	+ 33.9	19 40 39.25	. .	79 40 24.6	— 1.1
	18	α Aquilæ		9	45 24.11	+ 0.16	**— 22.42**	30 16 5.90	+ 3 28.83	+ 36.4	19 45 1.81	. .	81 26 32.3	— 1.3
	19	ε Draconis		9	48 55.83	— 2.31	— 22.46	328 52 8.42	+ 4 8.03	— 37.4	19 48 31.06	. .	20 2 0.2	— 1.2
	20	α Cygni		9	37 47.12	— 0.63	**— 22.50**	353 58 7.22	+ 4 5.96	— 6.5	20 37 24.04	. .	45 8 27.9	+ 0.3
	21	ε Cygni		8	41 48.79	— 0.32	— 22.45	5 18 10.42	+ 3 37.22	+ 5.8	20 41 26.02	+ 0.22	56 28 14.6	— 0.2
18	22	Sun I, N.		9	7 38.56	+ 0.48	— 22.44	50 2 10.65	+ 2 48.05	+ 1 13.5	22 7 16.60	+66.21	101 12 33.4	. .
	23	Sun II, S.		8	9 50.98	+ 0.48	— 22.44	50 34 9.45	+ 3 13.70	+ 1 14.9	22 9 29.02	—66.21	101 44 59.3	. .
	24	α Andromedæ		.	. . . .	. .	. .	10 24 1.60	+ 2 57.33	+ 11.3	0 2.3	. .	61 33 31.4	— 0.5
	25	α Cassiopeæ		9	34 12.77	— 1.09	— 22.41	342 56 5.68	+ 4 12.25	— 18.7	0 33 49.27	. .	34 6 20.4	— 0.7
	26	β Ceti		9	38 2.19	+ 0.60	**— 22.49**	57 26 4.82	+ 4 2.53	+ 1 35.9	0 37 40.38	. .	108 38 4.5	— 2.1
	27	β Andromedæ		9	3 31.10	— 0.35	**— 22.38**	3 50 6.75	+ 3 35.86	+ 4.2	1 3 8.34	. .	55 0 8.0	— 1.1
	28	Polaris		6	16 16.88	—39.79	— 22.41	310 10 9.58	+ 3 31.87	— 1 12.2	1 15 14.68	. .	1 18 50.4	0.0
	29	η Piscium		9	25 33.29	+ 0.06	**— 22.36**	24 6 0.75	+ 2 50.91	+ 27.4	1 25 10.94	. .	75 15 40.3	— 1.7
23, W.	30	β Tauri		9	19 14.48	— 0.30	**— 21.92**	10 17 58.42	+ 5 4.61	+ 11.2	5 18 52.33	. .	61 29 35.4	— 1.8
	31	δ Orionis		9	26 22.52	— 0.12	**— 21.82**	39 12 . .	. . . .	. .	5 26 0.56	. .	90 23 . .	. .
	32	α Leporis		9	27 55.06	— 0.02	**— 21.79**	56 42 2.75	+ 4 43.30	+ 1 32.7	5 27 33.20	. .	107 54 39.9	— 3.0
	33	ε Orionis		9	30 37.41	— 0.12	**— 21.85**	40 5 56.35	+ 3 41.70	+ 51.3	5 30 15.45	. .	91 16 50.5	— 2.3
	34	α Columbæ		3	35 45.82	+ 0.09	— 21.84	72 55 58.72	+ 2 56.32	+ 3 16.6	5 35 24.07	. .	124 8 32.8	— 2.3
	35	Lalande 11040		9	44 31.08	— 0.32	— 21.83	7 53 53.72	+ 4 12.37	+ 8.5	5 44 8.93	— 2.44	59 4 35.8	— 0.2
	36	B. A. C. 1889		9	48 55.06	+ 0.12	— 21.82	76 25 59.68	+ 3 15.12	+ 4 8.8	5 48 33.36	— 1.62	127 39 44.8	—19.6
	37	B. A. C. 1904		5	51 25.25	+ 0.14	— 21.82	78 43 58.35	+ 3 45.89	+ 4 59.3	5 51 3.57	— 1.62	129 59 4.7	—20.0
	38	Mars I, S.		6	58 11.55	— 0.29	— 21.82	12 22 1.90	+ 2 37.75	+ 13.4	5 57 49.44	+ 0.46	63 31 14.2	. .
	39	Mars II		5	58 12.40	— 0.29	— 21.82	12 22 . .	. . . .	. .	5 57 50.29	— 0.39	. . . . .	. .
	40	Weisse (2) 26		9	5 1.16	— 0.34	— 21.81	6 5 56.92	+ 4 30.64	+ 6.6	6 4 39.01	— 2.59	57 16 55.4	— 0.9
	41	δ Ursæ Min., S. P.		5	10 19.92	+ 5.83	— 21.80	305 27 55.90	+ 3 29.16	— 1 25.2	18 10 3.95	. .	356 36 21.1	— 0.9
	42	ν Geminorum		.	. . . .	. .	. .	18 31 58.20	+ 4 17.51	+ 20.5	6 22.0	. .	69 42 57.4	— 5.8
	43	B. A. C. 2194 (R)		.	. . . .	. .	. .	166 18 0.08	+ 3 17.20	— 14.8	. . . .	. .	64 45 18.7	— 5.2
	44	B. A. C. 2194		.	. . . .	. .	. .	13 33 57.78	+ 4 42.47	+ 14.8	6 36.7	. .	64 45 16.2	— 5.2
	45	51 Cephei		5	45 44.88	— 7.35	— 21.77	311 37 58.55	+ 2 59.40	— 1 8.4	6 45 15.76	. .	2 46 10.8	— 2.4
	46	Weisse (2) 704		6	26 10.97	— 0.26	— 21.73	15 41 59.85	+ 3 12.17	+ 17.2	7 25 48.98	— 2.72	66 51 50.4	— 8.7
	47	Weisse (2) 703		5	26 10.99	— 0.26	— 21.73	15 41 59.85	+ 3 24.69	+ 17.2	7 25 49.00	— 2.72	66 52 2.9	— 8.7
	48	B. A. C. 2535		9	34 48.80	+ 0.12	— 21.72	77 15 57.72	+ 4 18.68	+ 4 26.2	7 34 27.20	— 2.33	128 31 3.8	—20.6
	49	D. M. +33°, 1572		9	37 6.39	— 0.34	— 21.72	5 17 56.70	+ 4 47.19	+ 5.8	7 36 44.33	— 2.98	56 29 10.9	— 6.7
	50	B. A. C. 2575		5	40 45.91	+ 0.12	— 21.72	76 23 57.32	+ 5 23.02	+ 4 9.6	7 40 24.31	— 2.37	127 39 51.1	—20.4

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
4	30.42	46.0	43.0
9	30.42	43.5	39.4
13	. .	. .	37.5
16	30.44	40.8	36.9
17	30.65	32.8	28.9
21	30.65	34.9	31.6
23	30.64	37.4	33.8
29	30.60	39.4	36.3
30	30.09	31.9	30.7
43	30.10	31.3	29.9

For summary of the constants of reduction see page 3.

38, 42. One bisection.
3, 28, 41, 45. Three bisections.
24, 29. Four bisections.

ZENITH-POINT CORR.

″

1 to 16 + 45.83
17 to 29 + 44.95
30 to 50 + 48.23

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
22	— 6.8	+ 16 12.9	.	+ 16 6.1
23	— 6.9	— 16 12.9	.	— 16 19.8
38	— 1.9	— 5.2	0.0	— 7.1

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
February 23, W.	1	Lacaille 2956		9	41 15.99	+ 0.12	— 21.72	76 23 57.32	+ 2 0.66	+ 4 8.6	7 40 54.39	— 2.37	127 36 27.8	—20.4
	2	B. A. C. 2635		9	48 52.10	+ 0.12	— 21.71	77 17 58.95	+ 5 1.14	+ 4 27.3	7 48 30.51	— 2.42	128 33 48.6	—20.4
	3	B. A. C. 2649		9	52 12.17	— 0.22	— 21.70	22 0 0.45	+ 3 17.08	+ 24.8	7 51 50.25	— 2.70	73 10 3.5	—11.6
	4	B. A. C. 2701		9	59 5.38	+ 0.15	— 21.70	79 43 59.50	+ 3 18.91	+ 5 28.7	7 58 43.83	— 2.50	130 59 8.3	—20.4
	5	15 Argus		9	2 55.26	+ 0.01	— **21.67**	62 45 59.85	+ 3 51.16	+ 1 58.7	8 2 33.57	. .	113 58 10.9	— 1.9
	6	Mer. C. Z. 168, 6		3	11 54.82	+ 0.10	— 21.69	74 18 0.42	+ 4 51.19	+ 3 35.8	8 11 33.23	— 2.53	125 32 48.6	—19.9
	7	M. Z. 232, 21		6	12 8.44	+ 0.10	— 21.69	74 18 0.42	+ 3 35.37	+ 3 35.4	8 11 46.85	— 2.53	125 31 32.4	—19.9
	8	O. Arg. S. 8457		9	18 6.28	+ 0.05	— 21.68	67 22 2.88	+ 5 9.06	+ 2 26.4	8 17 44.65	— 2.53	118 35 59.5	—19.4
	9	VIII, 3		9	19 21.60	+ 0.05	— 21.68	67 22 2.88	+ 4 51.84	+ 2 26.4	8 18 59.97	— 2.54	118 35 42.3	—19.3
	10	η Cancri		9	26 17.83	— 0.25	— **21.67**	17 57 59.82	+ 5 1.87	+ 19.9	8 25 55.91	. .	69 9 42.8	— 2.2
	11	Yarnall 3565	9	9	33 38.63	— 0.25	— 21.67	18 36 1.18	+ 4 6.18	+ 20.7	8 33 16.71	— 2.84	69 46 49.3	—12.9
	12	Yarnall 3586	7	8	34 1.46	— 0.25	— 21.67	18 36 1.18	+ 2 24.57	+ 20.6	8 33 39.54	— 2.84	69 45 7.6	—13.0
	13	ε Hydræ		8	40 56.17	— 0.16	— **21.69**	31 58 0.15	+ 4 9.72	+ 38.3	8 40 34.35	. .	83 9 9.4	— 3.2
	14	ι Ursæ Majoris (R)			. . . .	. .	. .	189 31 59.80	+ 4 15.81	+ 10.4	. . . .	. .	41 29 55.2	0.0
	15	ι Ursæ Majoris			. . . .	. .	. .	350 20 2.70	+ 3 40.05	— 10.4	8 51.2	. .	41 29 53.6	— 1.6
24, R.	16	Moon I, S.		9	20 29.96	— 0.36	— 21.04	18 5 51.72	+ 4 36.83	+ 19.8	4 20 8.56	+68.79	69 17 9.6	. .
	17	α Tauri		9	29 32.09	— 0.34	— **20.97**	22 33 52.40	+ 3 6.86	+ 25.2	4 29 10.71	. .	73 43 45.7	— 1.0
	18	α Camelop. (R)			. . . .	. .	. .	207 10 5.20	+ 4 22.73	+ 31.1	. . . .	. .	23 51 22.2	0.0
	19	α Camelopardalis		6	42 45.00	— 0.84	— 21.03	332 42 1.80	+ 3 29.71	— 31.1	4 42 23.13	. .	23 51 21.6	— 0.6
	20	ι Aurigæ		9	49 42.22	— 0.42	— **21.04**	5 52 5.38	+ 2 44.11	+ 6.3	4 49 20.77	. .	57 1 15.0	— 1.5
	21	11 Orionis		8	58 12.82	— 0.33	— **20.99**	23 36 0.90	+ 2 53.76	+ 26.5	4 57 51.47	. .	74 45 42.4	— 2.5
	22	ε Ursæ Min., S. P.		3	58 19.81	+ 1.73	— 21.02	301 5 56.15	+ 2 48.67	— 1 39.9	16 58 0.52	. .	352 13 26.1	— 0.4
	23	α Aurigæ		9	8 22.63	— 0.52	— **21.11**	352 58 3.32	+ 3 0.24	— 7.4	5 8 1.10	. .	44 7 17.4	— 1.5
	24	β Tauri		9	19 13.61	— 0.40	— **20.99**	10 18 4.78	+ 4 58.86	+ 11.1	5 18 52.21	. .	61 29 35.9	— 1.3
	25	Groom. 966		9	24 24.88	— 1.22	— 21.00	323 52 4.82	+ 4 18.39	— 44.2	5 24 2.66	. .	15 2 0.2	— 1.2
	26	α Columbæ		9	35 45.19	— 0.13	— 20.99	72 56 3.42	+ 2 51.81	+ 3 16.0	5 35 24.07	. .	124 8 32.4	— 2.8
	27	Lalande 11040	7.8	9	44 30.30	— 0.41	— 20.99	7 53 58.50	+ 4 8.71	+ 8.5	5 44 8.90	— 2.43	59 4 36.9	— 0.2
	28	Mars I, N.		6	59 12.27	— 0.39	— 20.98	12 22 2.82	+ 3 38.97	+ 13.4	5 58 50.90	+ 0.46	63 32 16.4	. .
	29	Mars II, S.		5	59 13.12	— 0.39	— 20.98	12 22 2.82	+ 3 51.02	+ 13.4	5 58 51.75	— 0.39	63 32 28.4	. .
	30	Anonymous	9.2	4	14 14.18	— 0.85	— 20.97	332 26 4.58	+ 6 6.35	— 31.6	6 13 52.36	— 4.46	23 38 0.5	+ 8.1
	31	Lalande 12494		9	25 36.99	— 0.32	— 20.96	27 12 6.58	+ 3 37.18	+ 31.4	6 25 15.71	— 2.30	78 22 36.4	— 8.7
	32	B. A. C. 2162		9	30 35.78	— 0.13	— 20.95	71 24 1.78	+ 4 21.47	+ 3 0.0	6 30 14.70	— 1.92	122 37 44.4	—19.7
	33	B. A. C. 2212		9	39 49.87	— 0.10	— 20.95	77 50 4.30	+ 3 45.10	+ 4 37.6	6 39 28.82	— 1.95	129 4 48.2	—20.8
	34	O. Arg. N. 7479		9	55 14.46	— 0.58	— 20.94	347 22 8.25	+ 4 24.67	— 13.6	6 54 52.94	— 3.49	38 32 40.5	+ 1.1
	35	B. A. C. 2300[1]		5	56 42.03	— 0.60	— 20.94	345 53 58.20	+ 3 53.26	— 15.2	6 56 20.49	— 3.58	37 3 57.5	+ 1.4
	36	B. A. C. 2300[2]		3	56 42.27	— 0.60	— 20.94	345 53 58.20	+ 3 55.68	— 15.2	6 56 20.73	— 3.58	37 3 59.9	+ 1.4
	37	B. A. C. 2378		9	8 37.44	— 0.12	— 20.93	75 8 4.52	+ 2 53.73	+ 3 47.0	7 8 16.39	— 2.15	126 21 6.4	—20.6
	38	B. A. C. 2413		3	13 0.45	— 0.12	— 20.92	75 8 4.52	+ 5 3.39	+ 3 47.6	7 12 39.41	— 2.18	126 23 16.7	—20.6
	39	Stone 3672		6	24 42.45	— 0.14	— 20.92	70 22 1.90	+ 5 27.43	+ 2 50.4	7 24 21.39	— 2.25	121 36 40.9	—20.1
	40	Stone 3673		5	24 43.13	— 0.14	— 20.92	70 22 1.90	+ 5 21.55	+ 2 50.4	7 24 22.07	— 2.25	121 36 35.0	—20.1
	41	B. A. C. 2535		9	34 48.12	— 0.10	— 20.91	77 16 5.85	+ 4 8.45	+ 4 26.0	7 34 27.11	— 2.32	128 31 1.5	—20.8
	42	λ Ursæ Min., S. P.		4	40 53.82	+14.28	— 20.90	307 48 2.72	+ 3 42.09	— 1 18.4	19 40 47.20	. .	358 56 47.6	— 1.7
	43	Groom. 1361		9	41 23.80	— 1.47	— 20.90	320 56 0.15	+ 5 40.25	— 49.4	7 41 1.43	— 8.41	12 7 12.2	+ 2.8
	44	ι Ursæ Majoris		9	51 32.58	— 0.54	— 20.86	350 20 6.22	+ 3 36.42	— 10.4	8 51 11.18	. .	41 29 53.4	— 1.6
	45	σ^2 Ursæ Majoris		8	0 26.71	— 0.88	— 20.85	331 14 0.20	+ 3 33.00	— 33.5	9 0 4.98	. .	22 23 20.9	— 1.6
	46	κ Cancri		9	1 45.29	— 0.32	— **20.86**	27 40 3.82	+ 4 44.48	+ 32.2	9 1 24.12	. .	78 51 41.7	— 1.8
	47	1 Draconis		5	20 44.57	— 2.09	— 20.83	317 0 3.35	+ 3 51.15	— 56.9	9 20 21.65	. .	8 9 18.8	— 2.0
	48	α Hydræ		8	22 11.08	— 0.24	— **20.80**	46 58 6.58	+ 3 34.60	+ 1 5.7	9 21 50.01	. .	98 9 8.1	— 2.0
	49	ε Leonis (R)			. . . .	. .	. .	165 22 5.85	+ 3 15.55	— 15.9	. . . .	. .	65 41 15.7	+ 0.8
	50	ε Leonis			. . . .	. .	. .	14 30 6.38	+ 4 28.68	+ 15.9	9 39.2	. .	65 41 12.2	— 2.7

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
6	30.12	30.3	28.8		16	— 17 25.2	— 15 25.0	.	— 32 50.2
14	30.12	29.8	28.4	ZENITH-POINT CORR.	28	— 1.9	+ 6.0	.	+ 4.1
16	30.23	37.2	36.5	″	29	— 1.9	— 6.0	0.0	— 7.9
27	30.26	35.8	34.3						
33	30.28	34.8	33.2	6, 7, 8, 11, 12. One bisection.					
42	30.31	33.8	32.5	42, 43. Three bisections. 1 to 15 + 48.23					
46	30.32	33.5	31.4	17, 20, 23, 24, 25, 44. Four bisections. 16 to 50 + 48.74					
				16. Five bisections.					
				42. Barometer and thermometers read at $8^h\ 0^m$					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
February					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
24, R.	1	μ Leonis		9	46 27.27	− 0.39	**− 20.84**	12 16 1.65	+ 3 54.29	+ 13.4	9 46 6.06	. .	63 26 30.5	− 1.8
S.	2	γ Cygni		9	18 20.31	− 0.41	**− 20.45**	358 58 2.05	+ 2 54.33	− 1.1	20 17 59.32	. .	50 7 16.5	− 0.8
	3	α Cygni		9	37 45.24	− 0.45	**− 20.67**	353 58 2.30	+ 4 10.82	− 6.4	20 37 24.21	. .	45 8 27.9	− 1.5
	4	ν Cygni		9	53 7.22	− 0.42	**− 20.66**	358 8 2.20	+ 2 50.38	− 1.9	20 52 46.23	. .	49 17 11.9	− 1.0
	5	ζ Cygni		9	8 15.67	− 0.34	**− 20.52**	9 5 58.80	+ 2 52.40	+ 9.9	21 7 54.76	. .	60 15 22.3	− 1.3
	6	α Cephei		9	16 5.53	− 0.68	− 20.57	336 46 . .	. . .	. .	21 15 44.28	. .	27 55 . .	. .
25	7	Sun I, S.		9	34 19.56	− 0.18	− 20.54	47 59 58.08	+ 4 32.05	+ 1 7.7	22 33 58.44	+65.64	99 11 59.0	. .
	8	Sun II, N.		9	36 30.83	− 0.18	− 20.54	47 27 57.95	+ 4 14.15	+ 1 6.5	22 36 10.11	−65.63	98 39 39.8	. .
	9	α Andromedæ		9	2 38.58	− 0.34	**− 20.52**	10 23 56.35	+ 3 4.49	+ 11.1	0 2 17.72	. .	61 33 33.1	+ 0.1
	10	β Andromedæ		9	3 29.16	− 0.38	**− 20.50**	3 50 0.35	+ 3 44.20	+ 4.1	1 3 8.28	. .	55 0 9.9	− 0.4
	11	Polaris		7	15 39.60	−11.97	− 20.50	310 9 59.15	+ 3 42.24	− 1 11.1	1 15 7.13	. .	1 18 51.5	− 0.6
	12	B. A. C. 1372		9	19 57.83	− 0.07	− 20.40	73 3 53.12	+ 4 14.35	+ 3 17.4	4 19 37.36	− 1.01	124 17 46.1	−16.1
	13	α Tauri		9	29 31.47	− 0.30	**− 20.41**	22 33 58.68	+ 3 0.48	+ 25.3	4 29 10.78	. .	73 43 45.7	− 1.0
	14	B. A. C. 1467		9	38 57.39	− 0.09	− 20.39	69 46 4.65	+ 4 13.63	+ 2 43.9	4 38 36.91	− 1.19	120 59 23.4	−16.2
	15	B. A. C. 1483		9	42 17.77	− 0.04	− 20.39	78 20 1.55	+ 3 20.99	+ 4 48.0	4 41 55.34	− 1.07	129 34 31.7	−18.0
	16	Moon I, S.		9	16 48.74	− 0.32	− 20.38	17 37 52.70	+ 4 52.47	+ 19.4	5 16 28.04	+67.99	68 49 25.8	. .
	17	α Leporis		9	27 53.80	− 0.15	**− 20.43**	56 42 10.92	+ 4 36.43	+ 1 32.8	5 27 33.28	. .	117 54 41.4	− 1.6
	18	α Columbæ		9	35 44.54	− 0.08	**− 20.30**	72 55 57.80	+ 2 58.78	+ 3 16.8	5 35 24.09	. .	124 8 34.6	− 0.7
	19	B. A. C. 1849		9	44 48.48	− 0.68	− 20.37	338 58 0.98	+ 4 18.35	− 23.4	5 44 27.43	− 3.53	30 8 17.1	+ 8.7
	20	B. A. C. 1906		9	51 48.58	− 0.06	− 20.37	75 54 2.38	+ 4 13.68	+ 4 0.0	5 51 28.15	− 1.60	127 8 37.3	−19.9
	21	Mars I, S.		6	0 15.23	− 0.35	− 20.36	12 24 3.42	+ 3 4.16	+ 13.5	5 59 54.52	+ 0.43	63 33 42.3	. .
	22	Mars II, N.		5	0 16.02	− 0.35	− 20.36	12 24 3.42	+ 2 52.94	+ 13.5	5 59 55.31	− 0.36	63 33 31.1	. .
	23	Anonymous		9	14 12.99	− 0.84	− 20.36	332 28 3.40	+ 4 9.43	− 31.8	6 13 51.79	− 4.43	23 38 2.2	+ 8.2
	24	O. Arg. N. 6978		8	27 2.04	− 1.04	− 20.36	327 0 1.48	+ 3 27.66	− 39.6	6 26 40.64	− 5.48	18 9 10.7	+ 8.4
	25	O. Arg. N. 6979		8	27 4.74	− 1.05	− 20.36	327 0 1.48	+ 6 18.38	− 39.5	6 26 43.33	− 5.50	18 12 1.6	+ 8.4
	26	λ Ursæ Min., S. P.		5	40 49.04	+15.12	− 20.33	307 48 4.25	+ 3 42.43	− 1 18.9	19 40 43.83	. .	358 56 49.0	− 0.1
	27	15 Argus		9	2 54.08	− 0.12	**− 20.39**	62 45 58.28	+ 3 52.30	+ 1 59.4	8 2 33.64	. .	113 58 11.2	− 2.0
	28	β Cancri (R)		.	. . . .	. .	. .	150 36 6.35	+ 3 27.08	− 34.6	. . . .	. .	80 27 22.4	−14.0
	29	β Cancri		.	. . . .	. .	. .	29 16 3.42	+ 4 19.50	+ 34.6	8 10.1	. .	80 27 18.7	−14.0
	30	D. M. +80°, 281.		9	50 46.59	− 1.92	− 20.31	318 2 6.32	+ 5 26.25	− 55.2	8 50 24.36	−10.72	9 12 58.6	− 3.1
	31	κ Cancri		9	1 44.59	− 0.27	**− 20.21**	27 40 5.95	+ 4 42.17	+ 32.4	9 1 24.02	. .	78 51 41.7	− 1.8
	32	ε Leonis		9	39 32.71	− 0.34	**− 20.32**	14 30 10.70	+ 4 25.05	+ 16.1	9 39 12.08	. .	65 41 14.1	− 0.7
26, E.	33	α Leporis		9	27 53.23	− 0.30	**− 19.73**	56 41 57.82	+ 4 51.24	+ 1 30.5	5 27 33.19	. .	107 54 40.8	− 2.3
	34	ε Orionis		8	30 35.55	− 0.36	**− 19.80**	40 5 50.50	+ 3 49.95	+ 50.1	5 30 15.44	. .	91 16 51.7	− 1.1
	35	ψ^1 Draconis, S. P.		9	44 19.83	+ 0.66	− 19.75	291 4 3.10	+ 4 14.04	− 2 32.8	17 44 0.74	. .	342 12 5.5	− 0.6
	36	ψ^2 Draconis, S. P.		9	44 21.56	+ 0.66	− 19.75	291 4 3.10	+ 4 43.02	− 2 32.8	17 44 2.47	+ 1.96	342 12 34.5	+16.4
	37	α Orionis		9	49 9.20	− 0.40	**− 19.85**	31 26 3.78	+ 4 3.78	+ 36.5	5 48 49.04	. .	82 37 5.3	− 1.6
	38	ν Orionis		9	1 12.46	− 0.43	**− 19.71**	24 2 1.75	+ 4 22.73	+ 26.7	6 0 52.27	. .	75 13 12.4	− 2.0
	39	Moon I, N.		9	11 36.88	− 0.46	− 19.77	17 52 1.55	+ 2 44.58	+ 19.3	6 11 16.65	+66.81	69 1 26.6	. .
	40	μ Geminorum		9	16 11.94	− 0.47	**− 19.75**	16 16 2.20	+ 3 0.32	+ 17.5	6 15 51.70	. .	67 25 41.2	− 2.0
	41	γ Geminorum		9	31 16.23	− 0.44	**− 19.72**	22 20 4.32	+ 3 19.60	+ 24.6	6 30 56.01	. .	73 30 9.7	− 2.8
	42	ψ^5 Aurigæ		9	38 37.41	− 0.61	− 19.78	355 8 6.28	+ 4 1.22	− 5.0	6 38 17.02	− 3.04	46 18 23.7	+ 0.3
	43	51 Cephei		9	45 40.63	− 6.50	− 19.79	311 38 5.65	+ 2 52.40	− 1 7.2	6 45 12.34	. .	2 46 12.0	− 0.7
	44	δ Canis Majoris		9	3 57.82	− 0.26	**− 19.83**	65 0 5.35	+ 4 5.94	+ 2 8.5	7 3 37.76	. .	116 12 41.0	− 2.5
	45	D. M. +49°, 1607		8	6 39.74	− 0.67	− 19.80	349 32 10.80	+ 4 17.34	− 11.0	7 6 19.27	− 3.40	40 42 38.3	− 0.2
	46	D. M. +49°, 1608		6	6 57.31	− 0.67	− 19.80	349 32 10.80	+ 3 53.10	− 11.0	7 6 36.84	− 3.41	40 42 14.1	− 0.3
	47	δ Geminorum		9	13 27.39	− 0.46	**− 19.77**	16 38 3.22	+ 3 30.48	+ 18.0	7 13 7.13	. .	67 48 12.9	− 1.6
W.	48	α Aquilæ		3	45 21.79	− 0.39	**− 19.36**	30 15 58.98	+ 3 36.54	+ 35.3	19 45 2.00	. .	81 26 32.0	− 2.5
	49	β Aquilæ		6	49 51.28	− 0.38	**− 19.39**	32 42 0.82	+ 4 11.32	+ 38.8	19 49 31.50	. .	83 53 12.1	− 2.6
	50	γ Cygni		9	18 19.54	− 0.62	**− 19.42**	358 57 58.20	+ 2 58.52	− 1.0	20 17 59.52	. .	50 7 16.9	− 0.8

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
1	30.34	32.7	31.1
2	30.44	31.8	30.5
8	30.44	35.8	35.8
9	30.40	40.0	39.8
11	30.40	42.6	40.6
12	30.38	39.5	37.4
20	30.38	36.5	34.0
29	30.39	33.9	30.0
31	. .	. .	28.8
32	30.37	31.5	28.2
34	30.23	44.5	44.2
44	30.23	41.5	39.5
49	30.21	36.7	37.4

For summary of the constants of reduction see page 3.

11, 16, 26, 39, 43. Three bisections.

31. Thermometer read at $9^h\ 25^m$.

ZENITH-POINT CORR.

	″
1	+ 48.74
2 to 11	+ 47.86
12 to 32	+ 51.82
33 to 47	+ 52.61
48 to 50	+ 50.50

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
7	− 6.6	− 16 9.6	.	− 16 16.2
8	− 6.6	+ 16 9.6	.	+ 16 3.0
16	− 16 45.1	− 15 12.2	.	− 31 57.3
21	− 1.9	− 5.6	0.0	− 7.5
22	− 1.9	+ 5.6	.	+ 3.7
39	− 16 44.6	+ 15 1.9	.	− 1 42.7

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
February 26, W.	1	α Cygni		9	37 44.24	− 0.68	**− 19.40**	353 57 59.12	+ 4 14.95	− 6.3	20 37 24.16	. .	45 8 29.0	− 0.9
	2	ζ Cygni		9	8 14.82	− 0.53	**− 19.45**	9 6 0.45	+ 2 49.96	+ 9.6	21 7 54.88	. .	60 15 21.2	− 2.8
	3	α Cephei		9	16 4.68	− 1.01	− 19.41	336 45 57.25	+ 2 55.47	− 25.5	21 15 44.26	. .	27 54 48.4	− 1.5
	4	β Cephei		9	27 26.11	− 1.34	− 19.41	328 48 1.65	+ 3 34.19	− 35.9	21 27 5.36	. .	19 57 21.1	− 2.3
27	5	Sun I, N.		9	41 50.68	− 0.31	− 19.41	46 44 8.90	+ 3 10.75	+ 1 2.4	22 41 30.96	+65.48	97 54 43.2	. .
	6	Sun II, S.		9	44 1.64	− 0.31	− 19.41	47 16 5.92	+ 3 32.41	+ 1 3.6	22 43 41.92	−65.48	98 27 3.1	. .
	7	α Andromedæ		9	2 37.61	− 0.52	**− 19.38**	10 23 57.22	+ 3 3.08	+ 10.7	0 2 17.68	. .	61 33 32.2	− 1.1
	8	α Cassiopeæ		9	34 9.53	− 0.86	− 19.41	342 55 59.62	+ 4 20.19	− 17.7	0 33 49.26	. .	34 6 23.3	0.0
	9	β Ceti		3	37 59.88	− 0.25	**− 19.38**	57 25 57.95	+ 4 13.60	+ 1 30.6	0 37 40.22	. .	108 38 3.4	− 2.5
	10	β Andromedæ		9	3 28.31	− 0.57	**− 19.48**	3 50 0.88	+ 3 44.39	+ 3.9	1 3 8.33	. .	55 0 10.4	− 0.2
	11	Polaris		8	15 44.99	−17.22	− 19.41	310 10 4.25	+ 3 32.99	− 1 8.3	1 15 8.36	. .	1 18 50.1	− 2.4
R.	12	γ Geminorum		9	31 15.66	− 0.44	**− 19.17**	22 19 58.60	+ 3 26.63	+ 24.3	6 30 56.07	. .	73 30 10.7	− 1.8
	13	α Canis Majoris		9	40 18.41	− 0.26	− 19.14	55 22 9.02	+ 3 41.37	+ 1 25.6	6 39 59.01	. .	106 33 37.2	− 0.6
	14	51 Cephei		8	45 42.76	− 8.21	− 19.14	311 38 7.98	+ 2 47.13	− 1 6.4	6 45 15.41	. .	2 46 9.9	− 2.6
	15	ε Canis Majoris		9	54 20.66	− 0.19	**− 19.11**	67 36 2.05	+ 4 17.25	+ 2 23.2	6 54 1.33	. .	118 49 3.7	− 1.1
	16	Moon I, N.		9	4 28.37	− 0.45	− 19.13	19 36 3.42	+ 4 17.74	+ 21.2	7 4 8.79	+65.41	70 47 3.6	. .
	17	δ Geminorum		9	13 26.74	− 0.48	**− 19.12**	16 37 58.45	+ 3 35.76	+ 17.8	7 13 7.13	. .	67 48 13.2	− 1.2
	18	a^2 Geminorum (R)		.	. . . .	. .	. .	173 12 4.30	+ 3 2.85	− 7.0	. . . .	. .	57 51 21.0	+ 0.2
	19	a^2 Geminorum		.	. . . .	. .	. .	6 40 4.42	+ 4 45.96	+ 7.0	7 27.1	. .	57 51 18.6	− 2.2
	20	B. A. C. 2535		9	34 46.43	− 0.13	− 19.12	77 15 59.92	+ 4 24.19	+ 4 18.6	7 34 27.18	− 2.28	128 31 3.9	−21.5
	21	λ Ursæ Min., S. P.		4	40 50.42	+20.66	− 19.12	307 48 1.25	+ 3 41.43	− 1 16.3	19 40 51.96	. .	358 56 47.6	− 1.1
	22	Groom. 1361		9	41 22.26	− 2.06	− 19.12	320 55 55.98	+ 5 43.54	− 48.0	7 41 1.08	− 8.26	12 7 12.7	+ 3.4
	23	Taylor 3394		9	58 24.23	− 0.08	− 19.11	82 58 2.62	+ 4 44.33	+ 7 35.9	7 58 5.04	− 2.46	134 16 44.1	−21.7
	24	15 Argus		9	2 52.90	− 0.22	**− 19.13**	62 46 2.85	+ 3 53.76	+ 1 55.4	8 2 33.57	. .	113 58 13.2	− 0.3
	25	D. M. + 36°, 1782	9.3	6	10 14.39	− 0.59	− 19.11	2 5 59.90	+ 2 57.57	+ 2.2	8 9 54.69	− 3.13	53 15 20.9	− 7.9
	26	D. M. + 36°, 1783	9.5	5	10 16.47	− 0.59	− 19.11	2 5 59.90	+ 3 29.27	+ 2.2	8 9 56.77	− 3.13	53 15 52.6	− 7.9
	27	O. Arg. N. 9001	.	9	21 30.19	− 0.77	− 19.10	347 46 0.60	+ 4 33.69	− 12.8	8 21 10.32	− 3.71	38 56 42.7	− 5.6
	28	O. Arg. N. 9029	.	5	23 28.99	− 0.77	− 19.10	347 46 0.60	+ 1 44.64	− 12.9	8 23 9.12	− 3.72	38 53 53.5	− 5.7
	29	O. Arg. N. 9033	.	7	23 42.26	− 0.77	− 19.10	347 46 0.60	+ 6 34.84	− 12.8	8 23 22.39	− 3.71	38 58 43.8	− 5.7
	30	O. Arg. N. 9125	8.7	9	30 36.63	− 0.77	− 19.10	347 46 0.60	+ 3 27.61	− 12.9	8 30 16.76	− 3.73	38 55 36.5	− 6.3
	31	O. Arg. N. 9210	9.0	9	34 8.37	− 0.77	− 19.09	347 46 0.60	+ 3 36.66	− 12.9	8 33 48.51	− 3.73	38 55 45.6	− 6.6
	32	μ Leonis		9	46 25.53	− 0.50	**− 18.99**	12 15 59.58	+ 3 56.94	+ 13.1	9 46 5.97	. .	63 26 30.8	− 1.3
	33	79 Draconis, S. P.		9	51 38.99	+ 1.02	− 19.06	292 0 0.38	+ 4 47.86	− 2 26.2	21 51 20.95	. .	343 8 43.2	− 0.7
	34	α Leonis		9	2 27.57	− 0.41	**− 19.12**	26 15 59.90	+ 4 48.39	+ 29.6	10 2 8.11	. .	77 27 39.1	− 2.1
	35	9 Draconis (R)		.	. . . .	. .	. .	217 22 1.70	+ 2 32.97	+ 45.7	. . . .	. .	13 41 0.8	+ 1.3
	36	9 Draconis		.	. . . .	. .	. .	322 32 5.95	+ 3 17.29	− 45.7	10 25.0	. .	13 40 58.7	− 0.8
	37	Concordia		9	38 52.29	− 0.39	− 19.04	30 40 0.02	+ 2 47.59	+ 35.6	10 38 32.86	. .	81 49 44.4	− 2.8
	38	l Leonis		9	43 25.53	− 0.41	**− 19.05**	27 40 2.50	+ 3 12.36	+ 31.5	10 43 6.08	. .	78 50 7.6	− 1.4
March 1, R.	39	a^2 Capricorni		9	11 50.68	+ 0.14	**− 19.80**	51 44 8.05	+ 2 46.08	+ 1 13.5	20 11 31.14	. .	102 54 28.8	− 2.2
	40	γ Cygni		9	18 19.87	− 0.75	**− 19.56**	358 58 5.62	+ 2 49.66	− 1.0	20 17 59.43	. .	50 7 15.5	− 2.8
	41	α Cygni		9	37 44.82	− 0.89	**− 19.71**	353 58 4.58	+ 4 8.85	− 6.0	20 37 24.23	. .	45 8 28.6	− 1.9
	42	α Cephei		9	16 5.53	− 1.70	− 19.72	336 46 . .	. . .	. .	21 15 44.11	. .	27 55 . .	. .
2	43	Sun I, N.		8	53 4.76	+ 0.06	− 19.78	45 36 5.05	+ 3 0.96	+ 58.2	22 52 45.04	+65.24	96 46 25.4	. .
	44	Sun II, S.		9	55 15.24	+ 0.06	− 19.78	46 8 2.98	+ 3 19.20	+ 59.3	22 54 55.52	−65.24	97 18 42.7	. .
	45	Venus I, C.		9	5 17.85	+ 0.06	− 19.79	46 16 1.82	+ 3 34.66	+ 59.5	23 4 58.12	+ 0.31	97 26 57.2	. .
	46	Venus II		9	5 18.47	+ 0.06	− 19.79	. . . .	. . .	. .	23 4 58.74	− 0.31	. . . .	. .
	47	α Andromedæ		4	2 37.99	− 0.49	**− 19.79**	10 23 59.62	+ 3 2.18	+ 10.4	0 2 17.68	. .	61 33 33.4	− 0.4
	48	α Cassiopeæ		9	34 10.22	− 1.32	− 19.84	342 56 1.15	+ 4 17.44	− 17.2	0 33 49.06	. .	34 6 22.6	− 1.4
	49	β Ceti		9	37 59.86	+ 0.22	**− 19.85**	57 25 59.85	+ 4 13.56	+ 1 28.2	0 37 40.24	. .	108 38 2.8	− 2.8
	50	β Andromedæ		9	3 28.72	− 0.62	**− 19.87**	3 50 3.42	+ 3 41.65	+ 3.8	1 3 8.25	. .	55 0 10.1	− 1.0

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
4	30.22	43.7	44.0
6	30.20	47.3	49.9
7	30.18	50.6	56.3
11	30.18	55.6	56.8
12	30.19	48.3	46.3
16	30.17	47.1	44.7
31	30.19	44.4	42.2
34	30.19	43.6	41.3
38	30.18	41.7	39.3
39	30.05	50.9	53.8
42	30.06	54.3	57.6
44	30.03	57.8	62.1
47	30.02	61.3	66.8

For summary of the constants of reduction see page 3.

ZENITH-POIN CORR.

		′
45. One bisection.	1 to 11	+ 50.50
11, 21. Three bisections.	12 to 38	+ 50.94
17, 22, 33, 37, 38, 40. Four bisections.	39 to 50	+ 47.93
14, 16. Five bisections.		

47. Barometer and Thermometers read at 0^h 8^m.

No.	Parallax.	Semi-diam.	Defec. Illum.	Sum.
	′ ″	′ ″	″	′ ″
5	− 6.5	+ 16 9.9	.	+ 16 3.4
6	− 6.5	− 16 10.0	.	− 16 16.5
16	− 18 11.0	+ 14 54.0	.	− 3 17.0
43	− 6.3	+ 16 8.6	.	+ 16 2.3
44	− 6.4	− 16 8.6	.	− 16 15.0
45	− 3.7	. .	0.0	− 3.7

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
March 2, R.	1	Polaris (R)	.	.	. . .	. .	. .	229 42 2.95	+ 4 19.85	+ 1 6.4	. . . .	. .	1 18 52.0	— 1.1
	2	Polaris	.	7	16 6.36	—40.68	— 19.86	310 10 2.10	+ 3 35.91	— 1 6.4	1 15 5.82	. .	1 18 52.8	— 0.3
	3	B. A. C. 1865	.	9	45 45.60	+ 0.40	— 19.91	69 25 57.80	+ 4 50.53	+ 2 31.7	5 45 26.09	— 1.53	120 39 41.2	—18.8
	4	B. A. C. 1892	.	9	49 11.41	+ 0.55	— 19.91	77 17 59.65	+ 4 58.69	+ 4 9.6	5 48 52.05	— 1.45	128 33 29.1	—20.4
	5	B. A. C. 1906	.	9	51 47.17	+ 0.52	— 19.91	75 53 57.82	+ 4 37.96	+ 3 44.8	5 51 27.78	— 1.49	127 8 41.8	—20.3
	6	ν Orionis	.	9	1 12.42	— 0.28	— **19.88**	24 1 59.12	+ 4 27.88	+ 25.6	6 0 52.23	. .	75 13 13.8	— 0.6
	7	Piazzi 333	8.0	3	2 58.22	— 1.07	— 19.91	350 6 3.55	+ 3 32.71	— 9.9	6 2 37.24	— 2.95	41 15 47.6	+ 4.6
	8	Piazzi 334	6.8	5	2 58.21	— 1.07	— 19.91	350 6 3.55	+ 3 40.31	— 9.9	6 2 37.23	— 2.95	41 15 55.2	+ 4.6
	9	δ Ursæ Min., S. P.	.	6	10 9.62	+16.16	— 19.91	305 27 57.62	+ 3 20.52	— 1 20.0	18 10 5.87	. .	356 36 19.3	— 1.7
	10	B. A. C. 2066	.	6	18 9.14	+ 0.45	— 19.92	72 8 5.30	+ 5 36.13	+ 2 56.8	6 17 49.67	— 1.72	123 22 59.4	—20.3
	11	O. Arg. S. 5144	9.3	8	23 17.12	+ 0.32	— 19.92	64 34 1.62	+ 3 55.55	+ 2 0.2	6 22 57.52	— 1.82	115 46 18.6	—19.0
	12	B. A. C. 2153	.	9	29 33.30	+ 0.55	— 19.92	77 18 3.48	+ 3 56.00	+ 4 10.0	6 29 13.93	— 1.75	128 32 30.7	—21.4
	13	B. A. C. 2183	.	9	33 43.77	+ 0.43	— 19.92	71 0 2.35	+ 5 35.61	+ 2 45.8	6 33 24.28	— 1.83	122 14 45.0	—20.5
	14	B. A. C. 2214	.	9	40 20.39	+ 0.40	— 19.92	69 40 0.80	+ 8 22.57	+ 2 34.7	6 40 0.87	— 1.89	120 57 19.3	—20.4
	15	B. A. C. 2219	.	9	41 22.54	+ 0.40	— 19.92	69 40 0.80	+ 0 56.38	+ 2 33.7	6 41 3.02	— 1.89	120 49 52.1	—20.4
	16	51 Cephei	.	3	45 53.33	—19.65	— 19.93	311 38 3.50	+ 2 49.99	— 1 4.4	6 45 13.75	. .	2 46 10.3	— 1.6
	17	O. Arg. N. 7287	.	8	46 0.46	— 3.30	— 19.93	324 42 1.88	+ 5 32.93	— 40.5	6 45 37.23	— 6.03	15 53 15.5	+ 8.1
	18	δ Canis Majoris	.	8	3 57.27	+ 0.32	— **19.92**	65 0 3.38	+ 4 15.90	+ 2 3.0	7 3 37.66	. .	116 12 43.5	— 0.6
	19	B. A. C. 2372	.	9	7 43.47	+ 0.56	— 19.93	77 40 7.35	+ 4 3.61	+ 4 18.2	7 7 24.10	— 2.03	128 54 50.4	— 22.0
	20	δ Geminorum	.	9	13 27.49	— 0.41	— **19.98**	16 38 4.38	+ 3 30.36	+ 17.2	7 13 7.15	. .	67 48 13.1	— 1.2
	21	Weisse (2) 393	8.2	9	15 29.04	— 0.56	— 19.93	8 46 1.30	+ 4 36.48	+ 8.9	7 15 8.55	— 2.76	59 57 7.9	— 5.8
	22	a^2 Geminorum (R)	.	.	. . .	. .	. .	173 12 5.82	+ 3 0.80	— 6.8	. . . .	. .	57 51 21.4	+ 0.8
	23	a^2 Geminorum	.	.	. . .	. .	. .	6 40 3.85	+ 4 46.05	+ 6.8	7 27.1 . .	. .	57 51 17.9	— 2.7
	24	B. A. C. 2545	.	7	35 55.13	+ 0.54	— 19.94	76 38 6.15	+ 4 1.99	+ 3 58.7	7 35 35.73	— 2.23	127 52 28.0	—21.9
	25	Weisse (2) 1104	9.0	9	39 55.01	— 0.44	— 19.94	14 46 0.18	+ 0 27.49	+ 15.2	7 39 34.63	— 2.73	65 53 4.1	— 8.9
	26	Lalande 15548	8.3	8	53 3.80	— 0.43	— 19.95	15 22 3.48	+ 1 21.05	+ 15.9	7 52 43.42	— 2.76	66 30 1.6	— 9.8
	27	Lalande 15551	9.1	4	53 8.07	— 0.43	— 19.95	15 22 3.48	+ 7 4.89	+ 16.0	7 52 47.69	— 2.76	66 35 45.6	— 9.9
	28	B. VI+23°, 1871	9.3	8	56 15.41	— 0.43	— 19.95	15 22 3.48	+ 8 31.41	+ 16.0	7 55 55.03	— 2.77	66 37 12.1	—10.0
	29	15 Argus	.	9	2 53.18	+ 0.29	— **19.95**	62 46 0.62	+ 3 59.40	+ 1 51.9	8 2 33.52	. .	113 58 13.1	— 0.9
	30	D. M.+36°, 1782	9.3	6	10 15.30	— 0.71	— 19.95	2 6 0.15	+ 2 54.00	+ 2.2	8 9 54.64	— 3.10	53 15 17.6	— 7.6
	31	D. M.+36°, 1783	9.5	5	10 17.29	— 0.71	— 19.95	2 6 0.15	+ 3 28.42	+ 2.2	8 9 56.63	— 3.10	53 15 52.0	— 7.6
	32	O. Arg. N. 9058	.	9	24 42.73	— 1.16	— 19.96	347 45 59.35	+ 4 9.53	— 12.5	8 24 21.61	— 3.69	38 56 17.6	— 5.2
	33	B. VI+51°, 1438	.	9	26 51.50	— 1.16	— 19.96	347 45 59.35	+ 7 54.90	— 12.4	8 26 30.38	— 3.69	39 0 3.0	— 5.4
	34	Yarnall 3565	9.1	8	33 37.02	— 0.37	— 19.96	18 36 1.28	+ 4 9.77	+ 19.6	8 33 16.69	— 2.82	69 46 51.8	—12.8
	35	ε Hydræ	.	9	40 54.36	— 0.16	— **19.92**	31 58 4.38	+ 4 9.29	+ 36.2	8 40 34.24	. .	83 9 11.1	— 1.8
	36	D. M. + 80°, 281	.	8	50 50.58	— 5.82	— 19.97	318 2 2.02	+ 5 25.74	— 51.9	8 50 24.80	—10.53	9 12 57.1	— 1.8
	37	α Hydræ	.	9	22 9.99	+ 0.05	— **20.02**	46 58 0.88	+ 3 44.69	+ 1 2.4	9 21 50.06	. .	98 9 9.2	— 1.6
	38	Moon I, N.	.	9	31 12.38	— 0.20	— 19.98	29 32 4.52	+ 4 10.85	+ 33.1	9 30 52.20	+61.67	80 43 9.7	. .
	39	Melpomene	.	9	43 23.00	— 0.27	— 19.98	25 0 4.50	+ 1 55.31	+ 27.2	9 43 2.75	. .	76 8 48.2	— 2.3
	40	79 Draconis, S. P.	.	9	51 37.62	+ 3.24	— 19.98	292 0 5.30	+ 4 39.96	— 2 22.8	21 51 20.88	. .	343 8 43.7	+ 0.8
	41	α Leonis	.	9	2 28.29	— 0.25	— **20.00**	26 16 3.48	+ 4 44.37	+ 28.9	10 2 8.05	. .	77 27 37.9	— 3.3
	42	32 Ursæ Maj. (R)	.	.	. . .	. .	. .	206 44 3.48	+ 3 24.38	+ 29.4	. . . .	. .	24 18 23.9	— 1.1
	43	32 Ursæ Majoris	.	3	9 54.12	— 2.07	— 19.99	333 8 2.68	+ 4 28.87	— 29.4	10 9 32.06	. .	24 18 23.4	— 1.6
	44	Psyche	.	9	17 10.70	— 0.23	— 19.99	27 46 5.72	+ 2 30.96	+ 30.7	10 16 50.48	. .	78 55 28.6	— 1.8
	45	9 Draconis	.	6	25 32.80	— 3.86	— 20.00	322 32 1.82	+ 3 18.57	— 44.5	10 25 8.94	. .	13 40 57.1	— 1.5
	46	ρ Leonis	.	9	26 58.87	— 0.21	— **19.97**	28 54 6.15	+ 4 27.82	+ 32.3	10 26 38.66	. .	80 5 27.5	— 2.5
	47	l Leonis	.	9	43 26.33	— 0.23	— **20.01**	27 40 4.45	+ 3 11.27	+ 30.6	10 43 6.10	. .	78 50 7.5	— 1.5
	48	Uranus I, C.	.	6	12 39.92	— 0.15	— 20.01	32 48 2.90	+ 4 40.49	+ 37.7	11 12 19.76	+ 0.21	83 59 42.3	. .
	49	Uranus II	.	5	12 40.34	— 0.15	— 20.01	. . . .	. . .	. .	11 12 20.18	— 0.21	. . . .	. .
W.	50	γ Cygni	.	6	18 20.78	— 0.81	— 20.61	358 58 0.82	+ 2 57.77	— 1.0	20 17 59.36	. .	50 7 18.8	+ 0.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
2	30.01	65.8	68.0			38	— 26 28.2	+ 14 43.9	.	— 11 44.3
3	30.00	61.9	59.5		ZENITH-POINT CORR.	48	— 0.3	. .		— 0.3
18	30.00	58.6	56.8		″					
31	30.00	57.2	54.8							
39	29.99	52.4	49.5	8. One bisection.						
47	29.98	52.7	50.0	1, 9, 16, 17. Three bisections.	1 to 2 + 47.93					
48	29.98	52.3	49.5	37, 39, 40, 47, 48. Four bisections.	3 to 48 + 48.20					
50	30.07	57.9	60.3	2, 38. Five bisections.	50 + 48.10					

2. Barometer and thermometers read at $1^h\ 26^m$

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
March 2, W.	1	α Cygni . . .	.	9	37 45.81	− 0.97	**− 20.60**	353 58 1.02	+ 4 14.67	− 6.0	20 37 24.23	. .	45 8 30.9	+ 0.2
	2	ε Cygni . . .	.	9	41 47.37	− 0.63	− 20.61	5 18 3.30	+ 3 48.79	+ 5.4	20 41 26.13	− 0.01	56 28 18.7	− 2.7
	3	ν Cygni . . .	.	9	53 7.76	− 0.83	**− 20.68**	358 8 2.18	+ 2 53.27	− 1.8	20 52 46.32	. .	49 17 14.8	+ 0.6
	4	61¹ Cygni . . .	.	8	0 57.79	− 0.76	**− 20.61**	0 40 2.38	+ 3 26.18	+ 0.7	21 1 36.41	. .	51 49 50.5	+ 0.3
	5	ζ Cygni . . .	.	9	8 16.04	− 0.54	**− 20.60**	9 6 2.75	+ 2 50.58	+ 9.2	21 7 54.88	. .	60 15 23.7	− 0.9
	6	α Cephei . . .	.	9	16 6.88	− 1.90	− 20.62	336 46 3.80	+ 2 50.32	− 24.5	21 15 44.36	. .	27 54 50.8	− 0.3
	7	β Cephei . . .	.	9	27 29.07	− 2.82	− 20.62	328 47 59.88	+ 3 36.32	− 34.5	21 27 5.63	. .	19 57 22.9	− 1.7
	8	ε Pegasi . . .	.	9	38 44.47	− 0.15	**− 20.59**	29 29 59.75	+ 2 59.09	+ 32.4	21 38 23.70	. .	80 39 52.4	− 1.5
	9	Mercury II, C .	.	9	49 6.76	+ 0.18	− 20.63	49 25 59.75	+ 4 3.44	+ 1 6.8	21 48 46.31	− 0.33	100 37 31.2	. .
3	10	Sun I, N. . .	.	9	56 49.20	+ 0.11	− 20.64	45 11 58.30	+ 4 8.99	+ 57.4	22 56 28.67	+65.22	96 23 25.9	. .
	11	Sun II . . .	.	9	58 59.63	+ 0.11	− 20.64	45 44 . .	. . .	. .	22 58 39.10	−65.21	96 40 . .	. .
	12	Venus I, N. . .	.	9	9 56.87	+ 0.12	− 20.65	45 45 58.50	+ 4 22.32	+ 58.5	23 9 36.34	+ 0.33	96 57 40.5	. .
	13	α Andromedæ . .	.	9	2 38.87	− 0.51	**− 20.66**	10 24 1.75	+ 2 59.57	+ 10.4	0 2 17.70	. .	61 33 32.9	− 1.1
	14	γ Pegasi . . .	.	9	7 30.88	− 0.24	**− 20.64**	24 17 57.82	+ 3 31.78	+ 25.6	0 7 9.98	. .	75 28 16.4	− 0.8
	15	α Cassiopeæ . .	.	9	34 11.33	− 1.47	− 20.67	342 55 57.65	+ 4 20.64	− 17.3	0 33 49.19	. .	34 6 22.2	− 2.1
	16	β Andromedæ . .	.	4	3 29.58	− 0.67	**− 20.69**	3 49 54.90	+ 3 48.04	+ 3.8	1 3 8.24	. .	55 0 7.9	− 3.4
	17	Polaris . . .	.	7	16 14.64	−46.54	− 20.68	310 9 56.82	+ 3 38.67	− 1 6.7	1 15 7.42	. .	1 18 48.0	− 5.4
	18	ν Orionis . . .	.	9	1 13.14	− 0.16	**− 20.74**	24 2 . .	. . .	. .	6 0 52.18	. .	75 13 . .	. .
	19	δ Ursæ Min., S. P. .	.	6	10 10.12	+17.20	− 20.80	305 28 . .	. . .	. .	18 10 6.52	. .	3 24 . .	. .
	20	μ Geminorum . .	.	9	16 12.80	− 0.30	**− 20.86**	16 16 . .	. . .	. .	6 15 51.70	. .	67 26 . .	. .
	21	O. Arg. N. 6978 .	.	6	27 4.32	− 2.89	− 20.81	326 59 55.78	+ 3 30.23	− 37.4	6 26 40.62	− 5.19	18 9 9.8	+ 9.3
	22	O. Arg. N. 6979 .	.	5	27 6.75	− 2.89	− 20.81	326 59 55.78	+ 6 20.20	− 37.4	6 26 43.03	− 5.18	18 11 59.8	+ 9.2
	23	O. Arg. N. 7049 .	.	6	29 58.50	− 1.22	− 20.81	344 48 0.68	+ 4 12.33	− 15.6	6 29 36.47	− 3.34	35 58 18.6	+ 4.5
	24	O. Arg. N. 7052 .	.	5	30 14.95	− 1.22	− 20.81	344 48 0.68	+ 3 19.41	− 15.6	6 29 52.92	− 3.35	35 57 25.7	+ 4.5
	25	B. A. C. 2214 .	.	9	40 21.04	+ 0.59	− 20.82	69 39 56.88	+ 8 26.53	+ 2 35.7	6 40 0.81	− 1.86	120 57 20.3	−20.4
	26	B. A. C. 2219 .	.	9	41 23.23	+ 0.59	− 20.82	69 39 56.88	+ 0 59.41	+ 2 34.6	6 41 3.00	− 1.87	120 49 52.1	−20.4
	27	Yarnall 2789 .	.	6	49 2.47	+ 0.47	− 20.83	63 3 54.92	+ 4 23.80	+ 1 53.6	6 48 42.11	− 1.97	114 16 33.5	−19.4
	28	Yarnall 2790 .	.	5	49 9.86	+ 0.47	− 20.83	63 3 54.92	+ 2 33.75	+ 1 53.4	6 48 49.50	− 1.97	114 14 43.3	−19.4
	29	O. Arg. N. 7479 .	.	.	. . . .	. .	. .	347 21 55.88	+ 4 37.65	− 12.9	6 54.7	. .	38 32 41.8	+ 1.9
	30	Moon I, N. . .	.	9	17 16.12	0.00	− 20.96	33 51 59.62	+ 2 4.78	+ 39.2	10 16 55.16	+61.07	85 1 4.8	. .
	31	ρ Leonis . . .	.	9	26 59.73	− 0.08	**− 20.96**	28 53 53.72	+ 4 40.51	+ 32.4	10 26 38.69	. .	80 5 27.8	− 2.3
	32	B. VI+11°, 2284	.	9	43 41.31	− 0.11	− 20.97	27 5 57.28	+ 6 11.66	+ 30.1	10 43 20.23	− 2.83	78 19 0.2	−18.2
	33	D. M.+11°, 2286	.	8	44 25.90	− 0.11	− 20.97	27 5 57.28	+ 5 6.60	+ 30.0	10 44 4.82	− 2.83	78 17 55.1	−18.2
	34	α Ursæ Majoris .	.	9	56 53.30	− 1.76	− 20.98	336 27 57.18	+ 3 4.03	− 25.4	10 56 30.56	. .	27 36 57.0	− 1.9
4, E.	35	Lalande 11088 .	.	9	45 46.99	− 0.12	− 20.75	19 0 8.70	+ 3 0.79	+ 20.2	5 45 26.12	− 2.10	70 9 50.9	− 3.9
	36	α Orionis . . .	.	9	49 9.64	+ 0.09	**− 20.77**	31 26 0.80	+ 4 6.34	+ 35.9	5 48 48.98	. .	82 37 4.2	− 2.9
	37	ν Orionis . . .	.	9	1 13.00	− 0.03	**− 20.74**	24 2 8.10	+ 4 15.79	+ 26.2	6 0 52.22	. .	75 13 11.3	− 3.1
	38	B. A. C. 1982 .	.	9	3 50.41	+ 0.84	− 20.75	76 0 4.92	+ 4 14.15	+ 3 52.3	6 3 30.50	− 1.52	127 14 32.6	−20.7
	39	B. A. C. 2037 .	.	9	13 28.23	+ 0.84	− 20.75	75 58 7.22	+ 4 31.68	+ 3 52.0	6 13 8.32	− 1.59	127 12 52.1	−21.0
	40	μ Geminorum . .	.	9	16 12.52	− 0.16	**− 20.73**	16 16 0.40	+ 3 1.89	+ 17.2	6 15 51.61	. .	67 25 40.7	− 2.5
	41	B. A. C. 2136 .	.	9	27 22.77	+ 0.79	− 20.75	73 56 5.85	+ 5 0.28	+ 3 22.6	6 27 2.81	− 1.71	125 10 49.9	−21.0
	42	B. A. C. 2180 .	.	9	33 30.24	+ 0.83	− 20.75	75 38 5.02	+ 5 32.44	+ 3 47.4	6 33 10.32	− 1.74	126 53 46.1	−21.4
	43	B. A. C. 2218 .	.	9	41 20.00	+ 0.72	− 20.75	70 26 2.02	+ 4 43.82	+ 2 44.9	6 40 59.97	− 1.84	121 39 51.9	−20.7
	44	51 Cephei . . .	.	5	45 53.98	−19.29	− 20.75	311 37 59.42	+ 2 54.50	− 1 6.1	6 45 13.94	. .	2 46 9.0	− 2.6
	45	Weisse (2) 1633	.	8	55 55.99	− 0.04	− 20.75	23 18 3.55	+ 5 2.02	+ 25.5	6 55 35.20	− 2.38	74 29 52.3	− 9.0
	46	Piazzi 344 . .	.	9	2 34.73	+ 0.95	− 20.75	80 52 8.28	+ 4 43.18	+ 5 55.4	7 2 14.93	− 1.93	132 9 8.1	−22.5
	47	B. A. C. 2355 .	.	9	5 15.30	+ 0.89	− 20.75	78 12 7.15	+ 5 14.46	+ 4 37.7	7 4 55.44	− 1.96	129 28 20.5	−22.2
	48	B. A. C. 2452 .	.	3	19 24.21	+ 0.73	− 20.75	70 46 7.72	+ 3 27.39	+ 2 48.5	7 19 4.19	− 2.09	121 58 44.8	−21.3
	49	B. A. C. 2479 .	.	9	25 22.59	+ 0.87	− 20.75	77 20 6.02	+ 3 42.20	+ 4 19.0	7 25 2.71	− 2.11	128 34 28.4	−22.3
	50	Piazzi 137 . .	.	9	26 29.59	+ 0.70	− 20.75	69 30 6.88	+ 4 7.61	+ 2 37.6	7 26 9.54	− 2.14	120 43 13.3	−21.2

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
9	30.06	59.3	60.8
11	30.03	60.2	62.1
14	30.00	62.0	65.6
17	30.00	67.9	65.3
24	30.00	55.8	54.7
32	30.06	49.6	49.3
35	30.07	49.8	48.8

For summary of the constants of reduction see page 3.

30, 44. Three bisections.
17. Five bisections.

ZENITH-POINT CORR.

″

1 to 17 + 48.10
21 to 34 + 50.13
35 to 50 + 49.66

9. Barometer and thermometers read at 22ʰ 0ᵐ.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
9	− 10.0	. . .	+0.6	− 9.4
10	− 6.3	+ 16 9.1	.	+ 16 2.8
12	− 3.7	+ 5.0	.	+ 1.3
30	− 29 55.5	+ 14 44.2	.	− 15 11.3

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
March 4, E.	1	B. A. C. 2545		9	35 55.87	+ 0.85	− 20.75	76 38 7.85	+ 3 53.55	+ 4 5.8	7 35 35.97	− 2.18	127 52 28.4	−22.2
	2	B. A. C. 2570		9	40 3.00	+ 0.92	− 20.75	79 24 7.52	+ 3 29.56	+ 5 8.9	7 39 43.17	− 2.21	130 39 7.2	−22.5
	3	λ Ursæ Min., S. P		4	40 26.92	+51.78	− 20.75	307 48 4.68	+ 3 36.42	− 1 16.1	19 40 57.95	. .	358 56 46.2	− 1.2
	4	B. A. C. 2701		9	59 3.57	+ 0.93	− 20.75	79 44 6.50	+ 3 24.02	+ 5 19.2	7 58 43.75	− 2.35	130 59 10.9	−22.4
	5	B. A. C. 2712		9	0 2.59	+ 0.74	− 20.75	71 6 6.08	+ 5 29.63	+ 2 52.8	7 59 42.58	− 2.34	122 20 49.7	−21.6
	6	Anonymous		7	13 40.55	+ 0.72	− 20.75	70 28 8.92	+ 1 56.12	+ 2 46.5	8 13 20.52	− 2.41	121 39 12.7	−21.4
	7	O. Arg. N. 9033		9	23 44.14	− 0.91	− 20.75	347 46 6.25	+ 6 29.28	− 12.8	8 23 22.48	− 3.64	38 58 43.9	− 4.7
	8	O. Arg. N. 9058		9	24 43.34	− 0.91	− 20.75	347 46 6.25	+ 4 3.32	− 12.8	8 24 21.68	− 3.65	38 56 18.0	− 4.8
	9	Yarnall 3576		8	33 54.59	− 0.12	− 20.75	18 36 4.42	+ 5 11.06	+ 20.2	8 33 33.72	− 2.79	69 47 56.9	−12.6
	10	Yarnall 3586		5	34 0.37	− 0.12	− 20.75	18 36 4.42	+ 2 20.38	+ 20.1	8 33 39.50	− 2.79	69 45 6.1	−12.6
	11	θ Ursæ Majoris (R)		.	. . . .	. .	. .	193 16 3.90	+ 2 45.13	+ 14.1	. . . .	. .	37 47 18.1	− 0.3
	12	θ Ursæ Majoris		.	. . . .	. .	. .	346 38 4.25	+ 3 5.67	− 14.1	9 25.0	. .	37 47 17.0	− 1.4
	13	o Leonis (R)		.	. . . .	. .	. .	151 30 7.80	+ 2 9.35	− 32.4	. . . .	. .	79 34 36.4	−16.7
	14	o Leonis		.	. . . .	. .	. .	28 24 3.35	+ 3 35.17	+ 32.4	9 34.9	. .	79 34 32.1	−16.7
	15	Anonymous		9	42 41.97	+ 0.75	− 20.75	71 54 6.55	+ 2 30.11	+ 3 1.4	9 42 21.97	− 2.85	123 5 59.3	−20.0
	16	Weisse 955		9	45 52.14	+ 0.04	− 20.75	28 30 3.52	+ 1 13.51	+ 32.5	9 45 31.43	− 2.80	79 38 10.7	−17.0
	17	B. A. C. 3415		9	54 22.17	+ 0.07	− 20.75	30 12 5.40	+ 4 37.80	+ 34.9	9 54 1.49	− 2.80	81 23 39.3	−17.4
	18	α Leonis		9	2 28.82	+ 0.01	**− 20.79**	26 16 8.42	+ 4 38.91	+ 29.6	10 2 8.08	. .	77 27 38.1	− 3.1
	19	32 Ursæ Majoris		9	9 54.57	− 1.83	− 20.75	333 8 6.20	+ 4 24.92	− 30.2	10 9 31.99	. .	24 18 22.1	− 2.3
	20	Psyche		9	15 40.63	+ 0.03	− 20.75	27 36 2.42	+ 2 29.08	+ 31.3	10 15 19.91	. .	78 45 24.0	− 1.8
	21	Carrington 1547		6	19 19.35	− 6.64	− 20.75	316 36 3.82	+ 5 57.95	− 56.4	10 18 51.96	−11.31	7 47 26.6	− 8.9
	22	ρ Leonis		8	26 59.41	+ 0.05	**− 20.77**	28 54 5.85	+ 4 27.37	+ 33.2	10 26 38.71	. .	80 5 27.6	− 2.4
	23	l Leonis		9	43 26.78	+ 0.03	**− 20.71**	27 40 3.18	+ 3 9.67	+ 31.5	10 43 6.06	. .	78 50 5.5	− 3.5
	24	D. M. +11°, 2286		9	44 25.82	+ 0.02	− 20.75	27 6 8.05	+ 4 53.11	+ 30.8	10 44 5.09	− 2.83	78 17 53.2	−18.2
	25	Moon I, S.		9	2 48.19	+ 0.20	− 20.75	38 50 5.82	+ 4 33.95	+ 48.4	11 2 27.64	+60.96	90 1 49.4	. .
	26	Moon II		9	4 50.12	+ 0.20	− 20.75	38 35 . .	. . .	. .	11 4 29.57	−60.97	89 13 . .	. .
	27	δ Leonis		9	8 13.64	− 0.14	**− 20.73**	17 40 3.60	+ 3 18.96	+ 19.2	11 7 52.75	. .	68 50 3.0	− 3.5
	28	δ Crateris		9	13 49.70	+ 0.42	**− 20.74**	52 56 7.45	+ 4 51.33	+ 1 19.5	11 13 29.37	. .	104 8 39.5	− 3.1
9, R.	29	α Cygni		9	37 44.84	− 0.76	**− 19.67**	353 58 0.02	+ 4 15.86	− 6.0	20 37 24.51	. .	45 8 31.1	− 1.0
	30	ζ Cygni		8	8 15.10	− 0.54	**− 19.53**	9 5 56.95	+ 2 56.02	+ 9.2	21 7 54.99	. .	60 15 23.4	− 2.4
	31	α Cephei		9	16 5.56	− 1.24	− 19.57	336 46 1.15	+ 2 52.73	− 24.6	21 15 44.75	. .	27 54 50.5	− 2.4
	32	β Cephei		6	27 27.55	− 1.71	− 19.58	328 48 0.40	+ 3 37.16	− 34.7	21 27 6.26	. .	19 57 24.1	− 2.4
	33	ε Pegasi		9	38 43.69	− 0.34	**− 19.52**	29 30 2.70	+ 2 56.98	+ 32.6	21 38 23.77	. .	80 39 53.5	− 0.9
	34	Mercury II, C.		9	50 13.93	− 0.17	− 19.58	51 3 58.95	+ 3 18.75	+ 1 11.2	21 49 54.18	− 0.30	102 14 50.1	. .
10	35	α Andromedæ		9	2 37.89	− 0.52	**− 19.67**	10 23 54.65	+ 3 7.75	+ 10.6	0 2 17.76	. .	61 33 34.2	− 0.9
	36	β Andromedæ		9	3 28.41	− 0.60	**− 19.64**	3 50 0.90	+ 3 45.95	+ 3.9	1 3 8.19	. .	55 0 11.9	− 0.6
	37	Polaris		7	15 47.33	−24.56	− 19.62	310 9 58.92	+ 3 40.80	− 1 8.4	1 15 3.15	. .	1 18 52.5	− 3.0
	38	β Arietis		9	48 28.04	− 0.44	**− 19.52**	18 35 55.28	+ 3 29.59	+ 19.6	1 48 7.98	. .	69 46 5.7	− 0.1
	39	α Arietis		9	0 52.26	− 0.46	**− 19.64**	15 55 56.60	+ 3 7.04	+ 16.6	2 0 32.17	. .	67 5 41.4	− 0.6
11, W.	40	α^2 Geminorum		.	. . . .	. .	. .	6 42 1.38	+ 2 49.36	+ 7.1	7 27.1	. .	57 51 19.0	− 0.9
	41	α Canis Minoris		9	33 29.82	− 0.15	**− 19.92**	33 17 55.92	+ 3 40.75	+ 39.4	7 33 9.69	. .	84 28 37.3	− 1.2
	42	β Geminorum		.	. . . .	. .	. .	10 31 58.65	+ 2 59.44	+ 11.2	7 38.1	. .	61 41 30.5	− 1.0
	43	λ Ursæ Min., S. P.		5	40 49.16	+30.96	− 19.98	307 47 55.30	+ 3 46.41	− 1 16.8	19 41 0.14	. .	358 56 46.1	− 0.1
	44	Weisse (2) 1566		9	59 1.79	− 0.53	− 19.98	359 28 0.12	+ 4 8.88	− 0.5	7 58 41.28	− 2.98	50 38 29.7	− 5.2
	45	15 Argus		9	2 53.31	+ 0.11	**− 20.04**	62 46 1.28	+ 3 54.85	+ 1 56.1	8 2 33.44	. .	113 58 13.4	− 1.9
	46	B. A. C. 2774		9	9 24.37	+ 0.24	− 19.98	74 18 3.18	+ 5 4.08	+ 3 31.2	8 9 4.63	− 2.28	125 32 59.7	−23.2
	47	κ Cancri		9	1 44.19	− 0.20	**− 19.97**	27 39 55.30	+ 4 54.32	+ 31.6	9 1 24.01	. .	78 51 42.4	− 1.1
12, S.	48	ζ Cygni		.	. . . .	. .	. .	9 5 54.02	+ 2 59.41	+ 9.4	21 7.9	. .	60 15 24.0	− 2.2
13	49	B. A. C. 2225		9	42 30.56	+ 0.51	− 20.22	76 28 0.22	+ 0 55.69	+ 4 4.0	6 42 10.85	− 1.59	127 39 21.1	−22.8
	50	B. A. C. 2231		9	43 40.47	+ 0.51	− 20.22	76 28 1.55	+ 9 53.30	+ 4 6.7	6 43 20.76	− 1.59	127 48 22.7	−22.8

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
10	30.10	44.5	40.5
28	30.12	42.0	37.8
29	29.77	51.5	54.7
34	29.84	53.6	54.3
35	29.87	53.6	52.3
38	29.91	53.6	50.3
41	30.18	42.6	40.4
47	30.17	41.8	38.7
48	29.63	45.4	44.5
49	29.86	37.8	35.3

For summary of the constants of reduction see page 3.

		ZENITH-POINT CORR.
		″
9, 24.	One bisection.	1 to 28 + 49.66
25.	Three bisections.	29 to 39 + 50.52
33, 34, 35, 36, 37, 38, 39, 44.	Four bisections.	40 to 47 + 51.54
		48 + 49.44
		49 to 50 + 51.96

35. Barometer and thermometers read at 0^h 8^m.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
25	− 33 47.9	− 14 46.1	.	− 48 34.0
34	− 9.2	. .	+ 0.7	− 8.5

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
March 13, S.	1	ε Canis Majoris	.	9	54 20.87	+ 0.39	— **20.17**	67 35 55.15	+ 4 24.11	+ 2 24.7	6 54 1.05	. .	118 49 5.2	— 1.1
	2	Piazzi 344	.	9	2 34.29	+ 0.59	— 20.21	80 52 1.82	+ 4 45.78	+ 6 0.5	7 2 14.67	— 1.70	132 9 9.3	—23.9
	3	B. A. C. 2385	.	9	9 36.40	+ 0.42	— 20.20	69 39 56.15	+ 4 17.85	+ 2 40.8	7 9 16.62	— 1.85	120 53 16.0	—22.2
	4	B. A. C. 2430	.	9	15 23.66	+ 0.52	— 20.20	76 33 56.82	+ 5 18.21	+ 4 7.4	7 15 3.98	— 1.84	127 49 43.6	—23.5
	5	B. A. C. 2479	.	9	25 22.18	+ 0.53	— 20.19	77 19 57.20	+ 3 49.72	+ 4 22.1	7 25 2.52	— 1.91	128 34 30.2	—23.7
	6	B. A. C. 2554	.	9	37 28.42	+ 0.52	— 20.18	77 2 7.15	+ 3 8.18	+ 4 16.0	7 37 8.76	— 2.01	128 15 52.5	—23.8
	7	λ Ursæ Min., S. P.	.	6	40 47.23	+34.84	— 20.18	307 48 . .	. . .	. .	19 41 1.89	. .	358 57 . .	. .
	8	Lalande 15290	.	9	46 23.76	— 0.29	— 20.18	7 49 59.55	+ 5 34.60	+ 8.3	7 46 3.29	— 2.71	59 2 3.7	— 6.8
	9	B. A. C. 2701	.	9	59 3.10	+ 0.57	— 20.17	79 44 0.48	+ 3 27.78	+ 5 22.3	7 58 43.50	— 2.17	130 59 11.8	—24.2
	10	15 Argus	.	9	2 53.21	+ 0.33	— **20.19**	62 46 0.65	+ 3 56.04	+ 1 56.3	8 2 33.38	. .	113 58 14.2	— 1.4
	11	B. A. C. 2795	.	9	14 30.34	+ 0.50	— 20.16	75 3 59.10	+ 4 0.95	+ 3 42.6	8 14 10.68	— 2.28	126 18 3.8	—23.8
	12	Lacaille 3373	.	9	27 6.63	+ 0.53	— 20.15	77 26 0.20	+ 3 27.12	+ 4 24.8	8 26 47.01	— 2.38	128 40 13.3	—23.9
	13	Brisbane 2071	.	9	27 57.39	+ 0.53	— 20.15	77 26 0.20	+ 3 37.40	+ 4 24.9	8 27 37.77	— 2.38	128 40 23.7	—23.9
	14	ε Hydræ	.	9	40 54.33	0.00	— **20.16**	31 58 0.18	+ 4 10.93	+ 37.6	8 40 34.19	. .	83 9 9.9	— 3.2
	15	ε Leonis	.	9	39 32.27	— 0.20	— **20.07**	14 30 3.52	+ 4 32.24	+ 15.7	9 39 11.97	. .	65 41 12.7	— 0.9
	16	μ Leonis	.	9	46 26.36	— 0.23	— **20.14**	12 16 . .	. . .	. .	9 46 6.04	. .	63 26 . .	. .
	17	α Leonis	.	9	2 28.14	— 0.06	— **20.05**	26 16 6.35	+ 4 41.78	+ 29.9	10 2 8.00	. .	77 27 39.2	— 1.8
14, R.	18	δ Ursæ Min., S. P.	.	2	10 22.55	+ 7.60	— 19.79	305 27 51.65	+ 3 31.75	— 1 24.3	18 10 10.36	. .	356 36 20.3	+ 0.3
	19	O. Arg. S. 5133	6.8	8	22 47.37	+ 0.11	— 19.79	64 33 58.80	+ 4 34.44	+ 2 6.8	6 22 27.69	— 1.57	115 47 1.2	—19.9
	20	O. Arg. S. 5144	8.8	9	23 16.98	+ 0.11	— 19.78	64 33 58.80	+ 3 52.49	+ 2 6.7	6 22 57.31	— 1.57	115 46 19.2	—19.9
	21	B. A. C. 2164	6.4	9	30 47.16	0.18	— 19.78	72 42 0.42	+ 3 51.21	+ 3 12.6	6 30 27.56	— 1.52	123 55 25.4	—21.8
	22	α Canis Majoris	.	9	40 18.37	+ 0.04	— **19.78**	55 21 56.65	+ 3 53.98	+ 1 27.6	6 39 58.63	. .	106 33 39.4	+ 0.4
	23	51 Cephei	.	8	45 37.76	— 9.42	— 19.78	311 37 55.52	+ 3 1.52	— 1 7.9	6 45 8.56	. .	2 46 10.3	— 0.2
	24	ε Canis Majoris	.	9	54 20.68	+ 0.14	— **19.75**	67 36 1.78	+ 4 16.80	+ 2 26.6	6 54 1.04	. .	118 49 6.4	0.0
	25	δ Canis Majoris	.	9	3 57.09	+ 0.11	— **19.77**	64 59 58.65	+ 4 15.40	+ 2 9.8	7 3 37.43	. .	116 12 45.0	— 0.3
	26	δ Geminorum	.	9	13 26.99	— 0.26	— **19.81**	16 38 0.65	+ 3 33.35	+ 18.2	7 13 6.96	. .	67 48 13.4	— 0.7
	27	B. A. C. 2452	.	9	19 23.58	+ 0.16	— 19.77	70 45 59.75	+ 3 34.09	+ 2 53.1	7 19 3.97	— 1.89	121 58 48.1	—22.7
	28	B. A. C. 2479	.	9	25 22.03	+ 0.23	— 19.77	77 20 1.62	+ 3 42.42	+ 4 26.0	7 25 2.49	— 1.89	128 34 31.2	—23.9
	29	B. A. C. 2545	.	9	35 55.09	+ 0.25	— 19.77	76 38 1.25	+ 3 55.24	+ 4 12.1	7 35 35.54	— 1.98	127 52 29.8	—23.9
	30	Weisse (2) 1104	8.8	9	39 54.59	— 0.27	— 19.77	14 45 55.65	+ 0 31.20	+ 16.0	7 39 34.55	— 2.55	65 53 4.0	— 8.5
	31	Weisse (2) 1117	8.8	8	40 29.24	— 0.27	— 19.77	14 45 55.65	+ 7 37.00	+ 16.2	7 40 9.20	— 2.55	66 0 10.0	— 8.6
	32	Weisse (2) 1209	8.3	9	44 2.42	— 0.27	— 19.76	14 45 55.65	+ 5 16.79	+ 16.1	7 43 42.39	— 2.57	65 57 49.7	— 8.7
	33	Lalande 15548	8.3	8	53 3.28	— 0.27	— 19.76	15 21 55.70	+ 1 26.60	+ 16.7	7 52 43.25	— 2.59	66 30 0.2	— 9.3
	34	Lalande 15551	9.1	5	53 7.52	— 0.27	— 19.76	15 21 55.70	+ 7 9.58	+ 16.8	7 52 47.49	— 2.59	66 35 43.3	— 9.4
	35	B. VI + 23°, 1871	9.5	9	56 14.98	— 0.27	— 19.76	15 21 55.70	+ 8 38.11	+ 16.9	7 55 54.95	— 2.60	66 37 11.9	— 9.5
	36	D. M. + 23°, 1873	9.5	9	56 46.67	— 0.27	— 19.76	15 21 55.70	+ 6 39.29	+ 16.8	7 56 26.64	— 2.61	66 35 13.0	— 9.6
	37	B. A. C. 2777	5.7	6	9 54.25	+ 0.20	— 19.76	74 43 56.42	+ 4 17.83	+ 3 40.6	8 9 34.69	— 2.23	125 58 16.0	—23.8
	38	Brisbane 1942	6.5	5	9 54.77	+ 0.20	— 19.76	74 43 56.42	+ 5 24.79	+ 3 40.9	8 9 35.21	— 2.23	125 59 23.3	—23.8
	39	η Cancri (R)	.	.	. . .	. .	. .	161 54 0.75	+ 2 55.65	— 19.8	. . . .	. .	69 9 44.6	+ 0.3
	40	η Cancri	.	.	. . .	. .	. .	17 59 58.72	+ 3 2.65	+ 19.8	8 25.9	. .	69 9 42.4	— 1.9
	41	D. M. + 16°, 2042	9.8	9	46 19.20	— 0.21	— 19.74	22 48 1.20	+ 0 54.79	+ 25.7	9 45 59.25	— 2.82	73 55 42.9	—16.1
	42	α Leonis	.	9	2 27.93	— 0.18	— **19.73**	26 16 1.50	+ 4 46.96	+ 30.3	10 2 8.02	. .	77 27 40.0	— 1.0
	43	Psyche	.	9	8 43.21	— 0.17	— 19.73	26 47 58.78	+ 4 38.22	+ 31.0	10 8 23.31	. .	77 59 29.2	— 1.7
	44	γ¹ Leonis	.	9	13 50.87	— 0.24	— **19.79**	18 22 1.25	+ 5 15.49	+ 20.4	10 13 30.90	. .	69 33 58.3	— 1.6
	45	9 Draconis	.	8	25 30.33	— 1.91	— 19.73	322 32 2.08	+ 3 18.31	— 46.8	10 25 8.69	. .	13 40 54.8	— 0.3
	46	Anonymous	11.0	9	37 32.03	— 0.04	— 19.72	45 13 59.50	+ 3 8.28	+ 1 1.8	10 37 12.27	— 2.82	96 24 30.8	—19.6
	47	l Leonis	.	9	43 25.94	— 0.17	— **19.66**	27 39 57.65	+ 3 16.17	+ 32.2	10 43 6.05	. .	78 50 7.2	— 1.8
	48	α Ursæ Maj. (R)	.	.	. . .	. .	. .	203 26 3.30	+ 2 53.85	+ 26.6	. . . .	. .	27 36 57.4	+ 1.4
	49	α Ursæ Majoris	.	3	56 50.99	— 0.92	— 19.72	336 28 1.95	+ 2 57.98	— 26.6	10 56 30.35	. .	27 36 54.5	— 1.5
	50	Uranus I, C.	.	6	10 43.72	— 0.13	— 19.71	32 35 56.92	+ 4 35.80	+ 39.3	11 10 23.88	+ 0.16	83 47 33.2	. .

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
11	29.89	36.4	34.2
17	29.95	35.0	32.6
21	30.22	37.5	36.0
28	30.25	36.3	33.9
40	30.24	35.3	33.0
42	30.25	33.3	30.2
50	30.24	32.7	29.8

For summary of the constants of reduction see page 3.

21, 22, 24, 42, 47. Four bisections.
23. Five bisections.

ZENITH-POINT CORR.

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1 to 17 + 51.96
18 to 50 + 52.27

No.	Parallax.	Semi-diam.	Defec. Illum.	Sum.
	′ ″	′ ″	″	′ ″
50	— 0.3	. .	.	— 0.3

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
March 14, R.	1	Uranus II		5	10 44.04	− 0.13	− 19.71	32 36 . .	. . .	. .	11 10 24.20	− 0.16	83 48 . .	. .
19, W.	2	δ Geminorum		9	13 25.92	− 0.53	**− 18.57**	16 40 . .	. . .	. .	7 13 6.76	. .	67 48 . .	. .
	3	Piazzi VII, 67		9	18 59.58	− 1.03	− 18.63	330 7 55.88	+ 3 53.73	− 33.9	7 18 39.92	. .	21 17 36.9	− 0.8
	4	a^1 Geminorum		6	27 25.53	− 0.58	− 18.63	6 42 7.08	+ 2 46.81	+ 7.0	7 27 6.32	− 2.55	57 51 22.1	− 4.8
	5	a^2 Geminorum		5	27 25.99	− 0.58	**− 18.65**	6 42 7.08	+ 2 42.64	+ 7.0	7 27 6.78	. .	57 51 17.9	− 1.7
	6	α Canis Minoris		9	33 28.71	− 0.47	**− 18.62**	33 18 2.52	+ 3 33.61	+ 39.0	7 33 9.61	. .	84 28 36.3	− 2.3
	7	β Geminorum		9	38 27.39	− 0.56	**− 18.66**	10 32 . .	. . .	. .	7 38 8.20	. .	61 42 . .	. .
	8	λ Ursæ Min., S. P.		3	41 13.17	+13.30	− 18.63	307 48 . .	. . .	. .	19 41 7.84	. .	358 57 . .	. .
	9	φ Geminorum		9	46 38.21	− 0.55	**− 18.64**	11 46 2.75	+ 3 16.90	+ 12.4	7 46 19.03	. .	62 55 53.2	− 2.6
22, W.	10	β Cephei		6	27 27.03	− 1.21	− 19.65	328 47 52.28	+ 3 52.21	− 36.8	21 27 6.17	. .	19 57 28.9	− 0.8
	11	ε Pegasi		9	38 44.00	− 0.32	**− 19.61**	29 29 55.30	+ 3 0.85	+ 34.5	21 38 24.04	. .	80 39 51.9	− 2.7
	12	α Aquarii		9	0 3.89	− 0.27	**− 19.63**	39 41 58.38	+ 4 17.43	+ 50.5	21 59 43.98	. .	90 53 27.5	− 2.8
	13	α Pegasi		9	59 13.44	− 0.35	**− 19.65**	24 15 51.55	+ 3 3.89	+ 27.3	22 58 53.48	. .	75 25 43.9	− 0.2
23	14	Sun I, S.		9	10 12.11	− 0.28	− 19.58	37 54 0.75	+ 3 45.45	+ 46.8	0 9 52.25	+64.44	89 4 54.2	. .
	15	Sun II, N.		9	12 20.99	− 0.28	− 19.58	37 22 2.85	+ 3 39.07	+ 45.9	0 12 1.13	−64.44	88 32 49.0	. .
	16	β Andromedæ		9	3 28.17	− 0.49	**− 19.55**	3 50 0.55	+ 3 48.26	+ 4.1	1 3 8.12	. .	55 0 14.1	− 0.6
	17	Polaris		8	15 34.28	−15.92	− 19.55	310 9 56.75	+ 3 49.74	− 1 10.1	1 14 58.81	. .	1 18 57.6	− 1.7
	18	η Piscium		6	25 30.58	− 0.35	**− 19.49**	24 5 52.92	+ 2 59.73	+ 26.6	1 25 10.68	. .	75 15 40.4	− 3.8
	19	β Arietis		9	48 27.98	− 0.38	**− 19.61**	18 35 54.52	+ 3 30.86	+ 20.0	1 48 8.06	. .	69 46 6.6	− 0.3
	20	α Arietis		.	. . .	. .	. .	15 55 59.12	+ 3 5.76	+ 16.9	2 0.5	. .	67 5 43.0	− 0.2
	21	Moon I, S.		9	56 9.21	− 0.38	− 19.49	18 55 51.40	+ 4 46.51	+ 20.3	3 55 49.34	+69.96	70 7 19.4	. .
	22	Brisbane 1936	7	5	9 14.19	− 0.09	− 19.47	74 44 . .	. . .	. .	8 8 54.63	− 2.04	126 0 . .	. .
	23	Brisbane 1937		4	9 18.62	− 0.09	− 19.47	74 43 55.02	+ 3 48.92	+ 3 36.0	8 8 59.06	− 2.04	125 57 41.1	−25.0
	24	B. A. C. 2777		5	9 53.91	− 0.09	− 19.47	74 43 55.02	+ 4 26.10	+ 3 36.2	8 9 34.35	− 2.04	125 58 18.5	−25.0
	25	Brisbane 1942		3	9 54.56	− 0.09	− 19.47	74 43 55.02	+ 5 32.65	+ 3 36.5	8 9 35.00	− 2.04	125 59 25.4	−25.0
	26	D. M. +7°, 1981	9	9	22 24.16	− 0.32	− 19.47	31 35 57.88	+ 6 23.12	+ 36.8	8 22 4.37	− 2.36	82 49 19.0	−15.2
	27	Weisse (2) 974	8.5	9	40 24.86	− 0.40	− 19.46	18 33 50.10	+ 3 45.46	+ 20.1	8 40 5.00	− 2.57	69 44 16.9	−12.0
	28	ι Ursæ Maj. (R)		.	. . .	. .	. .	189 31 59.15	+ 4 21.55	+ 10.1	. . . .	. .	41 29 50.4	− 0.2
	29	ι Ursæ Majoris		.	. . .	. .	. .	350 19 58.10	+ 3 40.14	− 10.1	8 51.2	. .	41 29 49.3	− 1.3
	30	κ Cancri		9	1 43.64	− 0.34	**− 19.40**	27 39 57.28	+ 4 51.10	+ 31.5	9 1 23.84	. .	78 51 41.1	− 2.2
	31	α Hydræ		9	22 9.58	− 0.24	**− 19.48**	46 58 . .	. . .	. .	9 21 49.88	. .	98 9 . .	. .
	32	ε Leonis		9	39 31.80	− 0.42	**− 19.46**	14 30 . .	. . .	. .	9 39 11.93	. .	65 41 . .	. .
	33	11 Cephei, S. P.		3	40 28.64	+ 0.87	− 19.45	289 37 57.78	+ 4 27.92	− 2 45.9	21 40 10.06	. .	340 46 1.0	− 1.9
	34	μ Leonis		9	46 25.82	− 0.44	**− 19.47**	12 15 56.25	+ 3 57.95	+ 13.1	9 46 5.93	. .	63 26 28.5	− 1.4
	35	79 Draconis, S. P.		9	51 40.30	+ 1.03	− 19.45	291 59 59.35	+ 4 42.41	− 2 26.9	21 51 21.88	. .	343 8 36.1	− 1.0
24, W.	36	β Aquarii		7	25 40.81	− 0.27	**− 18.96**	44 54 . .	. . .	. .	21 25 21.64	. .	96 5 . .	. .
	37	ε Pegasi		9	38 43.28	− 0.32	**− 18.85**	29 29 54.68	+ 3 1.21	+ 34.7	21 38 24.06	. .	80 39 51.8	− 2.8
	38	α Aquarii		9	0 3.24	− 0.29	**− 18.93**	39 42 0.60	+ 4 14.18	+ 50.9	21 59 44.06	. .	90 53 26.9	− 3.3
	39	ζ Pegasi		3	35 54.38	− 0.32	**− 18.91**	28 35 54.72	+ 4 9.33	+ 33.4	22 35 35.18	. .	79 46 58.6	− 2.9
	40	ι Cephei		8	45 47.83	− 0.69	− 18.88	333 15 55.15	+ 3 24.76	− 30.7	22 45 28.26	. .	24 25 10.4	− 0.9
	41	α Pegasi		9	59 12.61	− 0.33	**− 18.81**	24 15 53.12	+ 3 1.09	+ 27.6	22 58 53.41	. .	75 25 43.0	− 1.2
25	42	Sun I, N.		9	17 27.79	− 0.30	− 18.85	36 33 59.18	+ 4 30.32	+ 45.3	0 17 8.64	+64.38	87 45 36.0	. .
	43	Sun II, S.		9	19 36.54	− 0.30	− 18.85	37 6 6.90	+ 4 32.79	+ 46.2	0 19 17.39	−64.37	88 17 47.1	. .
	44	Polaris		7	15 29.54	− 8.68	− 18.83	310 10 0.22	+ 3 47.93	− 1 11.6	1 15 2.03	. .	1 18 57.8	− 2.1
	45	η Piscium		9	25 29.83	− 0.33	**− 18.76**	24 6 . .	. . .	. .	1 25 10.68	. .	75 16 . .	. .
	46	β Arietis		9	48 27.21	− 0.35	**− 18.88**	18 35 53.92	+ 3 31.68	+ 20.4	1 48 8.05	. .	69 46 7.2	+ 0.1
	47	α Arietis		.	. . .	. .	. .	15 55 53.90	+ 3 10.67	+ 17.3	2 0.5	. .	67 5 43.1	− 0.3
	48	β Trianguli		.	. . .	. .	. .	4 23 52.58	+ 3 52.68	+ 4.7	2 2.5	. .	55 34 11.2	+ 5.2
	49	Moon I, N.		6	51 16.72	− 0.39	− 18.64	17 45 54.25	+ 0 51.91	+ 19.3	5 50 57.74	+67.93	68 53 25.7	. .
	50	ν Orionis		9	1 10.79	− 0.37	**− 18.57**	24 1 52.52	+ 4 33.63	+ 27.0	6 0 51.78	. .	75 13 14.4	− 0.2

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
3	30.10	45.8	43.7
9	30.11	45.4	43.3
11	30.43	35.4	36.3
13	30.43	39.2	39.8
15	30.39	41.2	42.2
18	30.36	46.8	47.8
21	30.28	48.7	50.7
30	30.18	42.0	40.4
35	30.16	41.9	38.7
36	30.39	30.9	32.3
43	. .	. .	33.8
44	30.35	38.8	36.7
48	30.35	41.0	39.0
49	30.32	39.8	39.3

For summary of the constants of reduction see page 3.

24, 25, 33. One bisection.
21, 44, 49. Three bisections.
17. Five bisections.

ZENITH-POINT CORR.

″

3 to 9 + 52.93
10 to 21 + 50.40
23 to 35 + 51.30
37 to 48 + 49.76
49 to 50 + 50.85

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
14	− 5.4	− 16 2.6	.	− 16 8.0
15	− 5.4	+ 16 2.6	.	+ 15 57.2
21	− 18 35.2	− 15 44.5	.	− 34 19.7
42	− 5.3	+ 16 5.6	.	+ 16 0.3
43	− 5.3	− 16 5.5	.	− 16 10.8
49	− 16 52.0	+ 15 15.1	.	− 1 36.9

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
March 25, W.	1	δ Ursæ Min., S. P.	.	8	10 30.44	+ 3.51	— 18.64	305 27 56.05	+ 3 27.14	— 1 24.3	18 10 15.31	. .	356 36 20.1	+ 0.1
	2	μ Geminorum	.	9	16 10.26	— 0.40	**— 18.64**	16 16 0.68	+ 3 1.93	+ 17.7	6 15 51.21	. .	67 25 41.5	— 1.6
	3	γ Geminorum	.	9	31 14.63	— 0.38	**— 18.64**	22 20 13.80	+ 3 11.15	+ 24.9	6 30 55.60	. .	73 30 11.1	— 1.4
	4	α Canis Majoris	.	9	40 17.37	— 0.28	**— 18.69**	55 22 8.48	+ 3 41.36	+ 1 27.5	6 39 58.44	. .	106 33 38.5	— 0.9
	5	Mars S.	.	.	. . . .	. .	. .	13 16 6.05	+ 3 34.09	+ 14.3	6 41.3	. .	64 26 15.6	. .
	6	Mars N.	.	.	. . . .	. .	. .	13 16 6.05	+ 3 24.86	+ 14.3	6 41.3	. .	64 26 6.4	. .
	7	51 Cephei	.	4	45 26.75	— 4.91	— 18.66	311 38 . .	. . .	. .	6 45 3.18	. .	2 46 . .	. .
	8	ε Canis Majoris	.	9	54 19.77	— 0.24	**— 18.71**	67 35 54.28	+ 4 23.99	+ 2 26.3	6 54 0.87	. .	118 49 5.8	— 1.2
	9	B. A. C. 2335	.	9	2 19.64	— 0.21	— 18.66	76 58 3.65	+ 3 50.38	+ 4 17.5	7 2 0.77	— 1.43	128 12 32.7	—24.3
	10	B. A. C. 2554	.	9	37 27.50	— 0.20	— 18.67	77 2 6.15	+ 3 10.41	+ 4 19.3	7 37 8.63	— 1.72	128 15 57.1	—25.2
	11	B. A. C. 2575	6	9	40 42.71	— 0.21	— 18.68	76 23 58.55	+ 5 32.66	+ 4 8.0	7 40 23.82	— 1.76	127 40 0.4	—25.2
	12	Lacaille 2956	7	5	41 12.89	— 0.21	— 18.68	76 24 . .	. . .	. .	7 40 54.00	— 1.76	127 36 . .	. .
	13	B. A. C. 2580	.	5	41 23.69	— 0.21	— 18.68	76 23 58.55	+ 6 57.30	+ 4 8.4	7 41 4.80	— 1.76	127 41 25.4	—25.2
	14	B. A. C. 2640	.	9	50 9.29	— 0.22	— 18.68	74 20 2.02	+ 4 35.65	+ 3 34.7	7 49 50.39	— 1.85	125 34 33.6	—25.0
	15	O. Arg. N. 8476	.	3	53 41.28	— 0.95	— 18.68	327 16 10.20	+ 5 27.32	— 38.9	7 53 21.65	— 4.72	18 27 19.8	+ 5.5
	16	O. Arg. N. 8511	.	3	56 9.36	— 0.95	— 18.68	327 16 10.20	+ 1 45.21	— 39.0	7 55 49.73	— 4.75	18 23 37.6	+ 5.3
	17	B. A. C. 2712	.	9	0 1.07	— 0.23	— 18.68	71 6 2.32	+ 5 32.99	+ 2 56.8	7 59 42.16	— 1.95	122 20 53.3	—24.6
	18	B. A. C. 2780	.	9	10 12.47	— 0.20	— 18.68	78 43 59.72	+ 4 21.66	+ 4 59.1	8 9 53.59	— 1.99	129 59 41.7	—25.9
	19	B. A. C. 2795	.	9	14 29.30	— 0.21	— 18.69	75 4 3.38	+ 3 52.79	+ 3 45.7	8 14 10.40	— 2.04	126 18 3.1	—25.4
	20	D. M + 7°, 1981	9	9	22 23.32	— 0.35	— 18.69	31 35 57.20	+ 6 22.30	+ 37.6	8 22 4.28	— 2.34	82 49 18.3	—15.3
	21	B. A. C. 2877[1]	.	6	27 24.20	— 0.20	— 18.69	77 26 8.38	+ 3 22.66	+ 4 28.7	8 27 5.31	— 2.14	128 40 20.9	—25.8
	22	B. A. C. 2877[2]	.	3	27 24.38	— 0.20	— 18.69	77 26 8.38	+ 3 25.27	+ 4 28.7	8 27 5.49	— 2.14	128 40 23.5	—25.8
	23	Brisbane 2071	.	3	27 56.42	— 0.20	— 18.69	77 26 8.38	+ 3 26.21	+ 4 28.8	8 27 37.53	— 2.14	128 40 24.6	—25.8
	24	ε Hydræ	.	9	40 53.03	— 0.34	**— 18.67**	31 58 0.75	+ 4 10.27	+ 38.1	8 40 33.99	. .	83 9 10.3	— 2.8
	25	ι Ursæ Maj. (R)	.	.	. . . .	. .	. .	189 32 17.40	+ 4 5.95	+ 10.3	. . . .	. .	41 29 47.5	— 2.8
	26	ι Ursæ Majoris	.	.	. . . .	. .	. .	350 20 8.85	+ 3 26.44	— 10.3	8 51.2	. .	41 29 46.2	— 4.1
	27	κ Cancri	.	9	1 42.91	— 0.36	**— 18.68**	27 40 1.55	+ 4 45.89	+ 32.1	9 1 23.85	. .	78 51 40.7	— 2.6
	28	α Hydræ	.	9	22 8.90	— 0.30	**— 18.76**	46 57 59.58	+ 3 44.43	+ 1 5.5	9 21 49.89	. .	98 9 10.7	— 2.2
26, R.	29	Mars I, C	.	6	43 23.55	— 0.45	— 18.19	13 20 0.05	+ 2 26.10	+ 13.7	6 43 4.91	+ 0.30	64 29 1.1	. .
	30	Mars II.	.	5	43 24.09	— 0.45	— 18.19	. . . .	. . .	. .	6 43 5.45	— 0.24	. . . .	. .
	31	Moon I, N.	.	9	45 42.54	— 0.41	— 18.19	19 17 59.48	+ 2 56.86	+ 20.1	6 45 23.94	+66.37	70 17 37.6	. .
	32	δ Geminorum	.	9	13 25.24	— 0.43	**— 18.11**	16 37 57.65	+ 3 37.14	+ 17.3	7 13 6.64	. .	67 48 13.3	— 0.5
	33	Piazzi VII, 67	.	9	18 58.60	— 1.12	— 18.16	330 8 5.28	+ 3 42.17	— 33.1	7 18 39.32	. .	21 17 35.5	— 1.6
	34	α[2] Geminorum	.	9	27 25.26	— 0.49	**— 18.14**	6 42 9.10	+ 2 41.28	+ 6.8	7 27 6.61	. .	57 51 18.4	— 0.8
	35	α Canis Minoris	.	9	33 28.08	— 0.35	**— 18.23**	33 18 11.90	+ 3 26.55	+ 38.1	7 33 9.58	. .	84 28 37.7	— 1.0
	36	λ Ursæ Min. S. P.	.	5	41 15.14	+18.53	— 18.15	307 47 57.40	+ 3 37.67	— 1 14.4	19 41 15.52	. .	358 56 41.9	— 2.3
	37	φ Geminorum	.	5	46 37.52	— 0.46	**— 18.17**	11 46 0.58	+ 3 19.43	+ 12.1	7 46 18.92	. .	62 55 53.3	— 2.1
	38	ζ Cancri (R)	.	.	. . . .	. .	. .	159 4 2.28	+ 2 36.30	— 22.1	. . . .	. .	72 0 4.7	—11.2
	39	ζ[1] Cancri	.	.	. . . .	. .	. .	20 49 58.32	+ 3 18.37	+ 22.1	8 5.5	. .	72 0 0.0	—11.2
	40	ι Ursæ Majoris	.	9	51 29.81	— 1.16	**— 18.09**	350 20 12.20	+ 3 24.75	— 9.8	8 51 10.55	. .	41 29 48.4	— 1.8
	41	κ Cancri	.	9	1 42.62	— 0.69	**— 18.07**	27 40 10.78	+ 4 39.29	+ 30.6	9 1 23.84	. .	78 51 41.9	— 1.4
	42	1 Draconis (R)	.	.	. . . .	. .	. .	222 52 8.60	+ 4 6.25	+ 54.1	. . . .	. .	8 9 12.3	— 0.7
	43	1 Draconis	.	.	. . . .	. .	. .	317 0 6.95	+ 3 37.84	— 54.1	9 20.3	. .	8 9 11.9	— 1.1
28, E.	44	B. A. C. 2386	.	9	9 42.93	+ 0.10	— 19.24	68 56 6.65	+ 3 38.81	+ 2 30.3	7 9 23.79	— 1.53	120 8 37.0	—23.1
	45	δ Geminorum	.	9	13 26.58	— 0.72	**— 19.20**	16 38 7.68	+ 3 24.86	+ 17.5	7 13 6.62	. .	67 48 11.2	— 2.5
	46	B. A. C. 2456	.	9	19 38.28	+ 0.10	— 19.24	68 46 6.28	+ 4 41.40	+ 2 29.4	7 19 19.14	— 1.61	119 59 38.3	—23.4
	47	α[1] Geminorum	.	6	27 26.30	— 0.91	— 19.25	6 42 9.08	+ 2 53.51	+ 6.9	7 27 6.14	— 2.38	57 51 20.7	— 4.6
	48	α[2] Geminorum	.	5	27 26.71	— 0.91	**— 19.21**	6 42 9.08	+ 2 39.94	+ 6.9	7 27 6.55	. .	57 51 17.1	— 2.0
	49	α Canis Minoris	.	9	33 29.20	— 0.45	**— 19.29**	33 18 5.82	+ 3 29.81	+ 38.4	7 33 9.50	. .	84 28 35.2	— 3.5
	50	B. A. C. 2547	.	9	36 6.01	+ 0.24	— 19.25	76 4 7.20	+ 4 29.93	+ 3 52.1	7 35 47.00	— 1.66	127 18 50.4	—25.2

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
27	30.32	35.9	32.6		ZENITH-POINT CORR.	5	— 1.6	— 4.6	0.0	— 6.2
28	30.32	35.4	32.6		″	6	— 1.6	+ 4.6	.	+ 3.0
31	30.04	56.2	55.0			29	— . 1.6	. .	0.0	— 1.6
39	30.05	54.8	53.4	5, 6, 11, 13, 23. One bisection.	1 to 28 + 50.85	31	— 17 56.1	+ 15 3.6	.	— 2 52.5
43	30.05	53.6	51.1	31. Three bisections.	29 to 43 + 51.06					
44	29.94	50.5	49.8	32, 34. Four bisections.	44 to 50 + 49.36					
				1, 36. Five bisections.						

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
March 28, E.	1	λ Ursæ Min., S. P.	.	5	40 47.04	+49.82	— 19.26	307 48 4.72	+ 3 30.65	— 1 15.0	19 41 17.60	. .	358 56 41.6	— 2.4
	2	φ Geminorum . .	.	9	46 38.96	— 0.80	— **19.30**	11 46 7.65	+ 3 11.50	+ 12.2	7 46 18.90	. .	62 55 52.6	— 2.7
	3	B. A. C. 2635 .	.	9	48 48.76	+ 0.26	— 19.26	77 18 10.62	+ 5 6.18	+ 4 15.4	7 48 29.76	— 1.75	128 33 53.4	—25.7
	4	B.VI + 23°,1861	9.5	9	52 9.92	— 0.74	— 19.26	15 10 9.02	+ 4 4.90	+ 15.9	7 51 49.92	— 2.36	66 20 51.0	— 8.6
	5	B. A. C. 2701 .	.	9	59 2.20	+ 0.32	— 19.27	79 44 7.48	+ 3 32.23	+ 5 13.9	7 58 43.25	— 1.82	130 59 14.8	—26.2
	6	B. A. C. 2780 .	.	9	10 12.41	+ 0.30	— 19.27	78 44 . .	. . .	. .	8 9 53.44	— 1.93	130 0 . .	. .
	7	Mer. C. Z. 168, 6	.	8	11 51.98	+ 0.20	— 19.27	74 18 10.32	+ 4 54.95	+ 3 26.4	8 11 32.91	— 1.96	125 32 52.9	—25.6
	8	M. Z. 232, 21 .	8.5	8	12 5.47	+ 0.20	— 19.27	74 18 10.32	+ 3 44.16	+ 3 26.1	8 11 46.40	— 1.97	125 31 41.8	—25.6
	9	Anonymous . .	9.4	3	13 4.11	+ 0.20	— 19.27	74 18 10.32	+ 5 35.86	+ 3 26.6	8 12 45.04	— 1.98	125 33 34.0	—25.6
	10	Anonymous . .	11.5	8	23 32.10	— 0.47	— 19.28	31 50 8.65	+ 4 13.58	+ 36.5	8 23 12.35	— 2.31	83 1 19.9	—15.4
	11	Moon I, N. . .	.	9	27 18.00	— 0.56	— 19.28	24 36 9.65	+ 2 57.94	+ 26.9	8 26 58.16	+63.24	75 45 55.7	. .
	12	Weisse (2) 786.	.	9	33 28.20	— 0.69	— 19.29	17 52 12.12	+ 2 44.19	+ 19.0	8 33 8.22	— 2.50	69 1 36.5	—11.4
	13	ι Ursæ Maj. (R) .	.	.	. . . .	. .	. .	189 32 9.45	+ 4 12.87	+ 9.9	. . . .	. .	41 29 49.0	— 0.9
	14	ι Ursæ Majoris .	.	5	51 31.30	— 1.36	— 19.30	350 20 21.15	+ 3 16.88	— 9.9	8 51 10.64	. .	41 29 49.3	— 0.6
	15	D. M. + 20°,2377	9.0	6	40 21.35	— 0.68	— 19.32	18 34 8.42	+ 4 1.51	+ 19.9	9 40 1.35	— 2.73	69 44 51.0	—14.1
	16	Weisse 955 . .	8.5	9	45 51.04	— 0.52	— 19.33	28 30 11.52	+ 1 5.10	+ 32.1	9 45 31.19	— 2.66	79 38 9.9	—16.8
	17	B. A. C. 3453 (R)	.	.	. . . .	. .	. .	158 24 13.48	+ 2 28.97	— 23.3	. . . .	. .	72 40 2.1	—15.6
	18	B. A. C. 3453 .	.	.	. . . .	. .	. .	21 30 13.05	+ 3 0.00	+ 23.3	10 0.9	. .	72 39 57.5	—15.6
	19	γ¹ Leonis . . .	.	6	13 50.72	— 0.69	— **19.28**	18 22 10.65	+ 5 3.89	+ 19.7	10 13 30.69	. .	69 33 55.4	— 3.4
	20	γ² Leonis . . .	.	5	13 51.04	— 0.69	— 19.34	18 22 10.65	+ 5 5.87	+ 19.7	10 13 31.01	— 2.81	69 33 57.4	—15.2
	21	Carrington 1547	.	5	19 16.51	— 7.02	— 19.35	316 36 4.70	+ 5 48.62	— 55.7	10 18 50.14	— 9.98	7 47 18.8	— 2.1
	22	ρ Leonis . . .	.	9	26 58.48	— 0.52	— **19.34**	28 54 7.38	+ 4 24.26	+ 32.8	10 26 38.61	. .	80 5 25.6	— 4.1
	23	226 Cephei, S. P.	.	7	30 25.01	+ 3.33	— 19.35	294 28 6.75	+ 4 46.51	— 2 9.0	22 30 8.99	. .	345 37 5.5	— 0.6
	24	Anonymous . .	.	9	36 22.98	— 0.28	— 19.36	45 14 10.08	+ 7 6.44	+ 1 0.0	10 36 3.34	— 2.77	96 28 37.7	—20.6
	25	Anonymous . .	.	9	37 31.87	— 0.28	— 19.36	45 14 10.08	+ 2 56.19	+ 59.8	10 37 12.23	— 2.78	96 24 27.3	—20.6
	26	B.VI + 11°,2284	10.0	9	43 40.12	— 0.54	— 19.36	27 6 11.70	+ 5 55.17	+ 30.5	10 43 20.22	— 2.81	78 18 58.6	—17.7
	27	D. M. + 11°,2286	9.5	6	44 25.02	— 0.54	— 19.36	27 6 11.70	+ 4 50.11	+ 30.5	10 44 5.12	— 2.82	78 17 53.5	—17.7
	28	Anonymous . .	11.0	9	51 23.34	— 0.57	— 19.36	25 34 10.32	+ 4 2.12	+ 28.5	10 51 3.41	— 2.84	76 45 2.1	—17.5
	29	δ Leonis . . .	.	9	8 12.92	— 0.70	— **19.42**	17 40 12.05	+ 3 9.68	+ 19.0	11 7 52.85	. .	68 50 1.9	— 2.6
	30	δ Crateris . . .	.	9	13 48.99	— 0.16	— **19.40**	52 56 13.90	+ 4 48.94	+ 1 18.8	11 13 29.45	. .	104 8 42.8	— 2.9
29, S.	31	χ³ Orionis . . .	.	9	56 49.88	— 0.28	— 19.69	19 8 3.90	+ 3 53.36	+ 20.1	5 56 29.91	— 1.70	70 18 38.6	— 4.8
	32	Piazzi 334 . .	.	9	2 57.10	— 0.94	— 19.69	350 6 1.32	+ 3 44.57	— 10.0	6 2 36.47	— 2.22	41 15 57.1	+ 4.8
	33	μ Geminorum . .	.	9	16 11.10	— 0.32	— **19.63**	16 16 4.55	+ 3 2.01	+ 17.0	6 15 51.09	. .	67 25 44.8	+ 1.6
	34	γ Geminorum . .	.	9	31 15.43	— 0.22	— **19.67**	22 20 4.88	+ 3 23.60	+ 23.9	6 30 55.51	. .	73 30 13.6	+ 1.1
	35	Mars I, S. . .	.	6	48 55.37	— 0.37	— 19.70	13 28 2.00	+ 3 33.42	+ 14.0	6 48 35.30	+ 0.34	64 38 10.6	. .
	36	Mars II, N. . .	.	5	48 55.99	— 0.37	— 19.70	13 28 2.00	+ 3 25.65	+ 14.0	6 48 35.92	— 0.28	64 38 2.8	. .
	37	Weisse (2) 1630	.	9	55 55.61	— 0.25	— 19.71	20 54 0.38	+ 4 4.46	+ 22.3	6 55 35.65	— 1.99	72 4 48.3	— 8.1
	38	B. A. C. 2326 .	.	9	6 43.72	— 6.84	— 19.71	316 11 59.22	+ 4 20.88	— 55.6	7 6 17.17	— 7.72	7 21 45.7	+10.8
	39	B. A. C. 2458 .	.	9	19 46.66	+ 0.44	— 19.71	67 52 5.45	+ 3 59.28	+ 2 22.8	7 19 27.39	— 1.60	119 4 48.7	—23.2
	40	Lalande 14961 .	.	9	35 46.10	— 0.19	— 19.72	24 20 2.80	+ 4 18.94	+ 26.5	7 35 26.19	— 2.15	75 31 9.4	—11.0
	41	B. A. C. 2554 .	.	9	37 27.67	+ 0.61	— 19.72	77 2 6.85	+ 3 17.52	+ 4 9.2	7 37 8.56	— 1.64	128 15 54.8	—25.5
	42	B. A. C. 2568 .	.	9	39 53.00	+ 0.60	— 19.72	76 40 6.28	+ 5 8.71	+ 4 3.0	7 39 33.88	— 1.66	127 55 39.2	—25.5
	43	λ Ursæ Min., S. P.	.	4	40 49.42	+48.93	— 19.72	307 47 59.92	+ 3 37.25	— 1 15.0	19 41 18.63	. .	358 56 43.4	— 0.4
	44	B. A. C. 2591 .	.	9	42 41.42	+ 0.60	— 19.72	76 14 4.42	+ 5 2.21	+ 3 55.3	7 42 22.30	— 1.69	127 29 23.1	—25.5
	45	O. Arg. N. 8476	.	9	53 43.66	— 2.59	— 19.72	327 16 0.88	+ 5 36.06	— 37.4	7 53 21.35	— 4.52	18 27 20.7	+ 6.0
	46	O. Arg. N. 8511	.	9	56 11.77	— 2.60	— 19.72	327 16 0.88	+ 1 53.64	37.5	7 55 49.45	— 4.56	18 23 38.2	+ 5.8
	47	B. A. C. 2712 .	.	9	0 1.42	+ 0.50	— 19.72	71 8 5.78	+ 3 36.61	+ 2 50.1	7 59 42.20	— 1.87	122 20 53.7	—24.9
	48	B. A. C. 2780 .	.	9	10 12.63	+ 0.65	— 19.73	78 44 1.00	+ 4 32.60	+ 4 47.6	8 9 53.55	— 1.90	129 59 42.4	—26.3
	49	Anonymous . .	.	8	11 30.11	— 0.74	— 19.73	356 43 59.82	+ 3 27.78	— 3.3	8 11 9.64	— 2.78	47 53 45.5	— 3.4
	50	O. Arg. N. 8887 .	.	9	15 14.28	— 1.03	— 19.73	347 46 3.42	+ 4 19.30	— 12.6	8 14 53.52	— 3.08	38 56 31.3	— 0.8

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
6	29.94	48.7	47.0
30	30.00	42.5	40.2
33	30.05	54.1	53.9

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

″

7, 8, 9, 10, 12, 21, 27, 49. One bisection. 1 to 14 + 49.36
1, 43. Three bisections. 15 to 30 + 49.28
11. Five bisections. 31 to 50 + 51.55

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
11	— 22 27.1	+ 14 49.0	.	— 7 38.1
35	— 1.6	— 3.9	0.0	— 5.5
36	— 1.6	+ 3.9	.	+ 2.3

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
March 29, S.	1	B.A.C. 2877[1] (N.)	.	6	27 24.37	+ 0.62	— 19.73	77 26 2.98	+ 3 38.46	+ 4 18.5	8 27 5.26	— 2.06	128 40 21.1	—26.3
	2	B.A.C. 2877[2] (S.)	.	5	27 24.57	+ 0.62	— 19.73	77 26 2.98	+ 3 43.05	+ 4 18.5	8 27 5.46	— 2.06	128 40 25.7	—26.3
	3	ε Hydræ . . .	.	9	40 53.87	— 0.08	**19.83**	31 58 1.72	+ 4 11.40	+ 36.7	8 40 34.05	. .	83 9 11.0	— 2.1
	4	12-Yr. Cat. 1879, S.P.	.	9	53 4.22	+ 5.28	— 19.74	298 57 59.68	+ 3 50.44	— 1 45.4	20 52 49.76	. .	350 6 25.9	+ 0.3
	5	κ Cancri . . .	.	9	1 43.72	— 0.14	**— 19.76**	27 40 4.42	+ 4 44.97	+ 30.9	9 1 23.84	. .	78 51 41.5	— 1.6
	6	Moon I, N. . .	.	9	14 59.31	— 0.13	— 19.75	28 18 1.12	+ 3 41.08	+ 31.7	9 14 39.43	+62.06	79 28 35.1	. .
	7	α Hydræ . . .	.	9	22 9.46	+ 0.13	**— 19.80**	46 58 2.00	+ 3 45.70	+ 1 3.1	9 21 49.84	. .	98 9 12.0	— 1.1
	8	B. A. C. 3453 (R)	.	.	. . . .	. .	. .	158 24 4.30	+ 2 37.36	— 23.3	. . . .	. .	72 40 2.8	—15.4
	9	B. A. C. 3453 .	.	.	. . . .	. .	. .	21 30 3.25	+ 3 10.57	+ 23.3	10 0.9	. .	72 39 58.3	—15.4
	10	ρ Leonis . . .	.	9	26 58.53	— 0.13	**— 19.78**	28 54 1.52	+ 4 32.20	+ 32.7	10 26 38.63	. .	80 5 27.6	— 2.0
	11	Anonymous . .	.	9	37 31.87	+ 0.10	— 19.77	45 14 1.15	+ 3 7.38	+ 59.6	10 37 12.20	— 2.77	96 24 29.3	—20.7
	12	ζ Leonis . . .	.	9	43 25.89	— 0.14	**— 19.68**	27 40 2.85	+ 3 12.04	+ 31.0	10 43 5.98	. .	78 50 7.1	— 1.3
	13	α Ursæ Majoris (R)	.	.	. . . .	. .	. .	203 26 0.50	+ 3 3.70	+ 25.7	. . . .	. .	27 36 51.3	— 0.8
	14	α Ursæ Majoris .	.	8	56 51.44	— 1.62	— 19.77	336 28 3.08	+ 2 52.15	— 25.7	10 56 30.05	. .	27 36 50.7	— 1.4
	15	Uranus I, N. .	.	6	8 25.90	— 0.08	— 19.78	32 22 5.25	+ 4 14.19	+ 37.6	11 8 6.04	+ 0.21	83 33 18.2	. .
	16	Uranus II, S. .	.	5	8 26.32	— 0.08	— 19.78	32 22 5.25	+ 4 17.94	+ 37.6	11 8 6.46	— 0.21	83 33 22.0	. .
R.	17	ι Cephei . . .	.	.	. . . .	. .	. .	333 16 5.18	+ 3 15.06	— 28.7	22 45.5	. .	24 25 12.7	+ 0.1
	18	α Pegasi . . .	.	.	. . . .	. .	. .	24 16 4.55	+ 2 51.62	+ 25.7	22 58.9	. .	75 25 43.1	— 1.2
	19	Mercury C. . .	.	.	. . . .	. .	. .	47 12 8.45	+ 3 21.98	+ 1 1.5	23 9.0	. .	98 22 53.1	. .
	20	γ Cephei . . .	.	.	. . . .	. .	. .	321 52 5.58	+ 3 45.60	— 44.3	23 34.5	. .	13 1 28.1	— 2.4
30	21	Sun N. . . .	.	.	. . . .	. .	. .	34 38 2.30	+ 3 33.95	+ 39.1	0 36.4	. .	85 48 36.5	. .
	22	Sun S. . . .	.	.	. . . .	. .	. .	35 10 2.68	+ 3 34.44	+ 39.9	0 36.4	. .	86 20 38.2	. .
	23	β Andromedæ . .	.	.	. . . .	. .	. .	3 50 2.38	+ 3 46.61	+ 3.9	1 3.1	. .	55 0 14.1	— 1.7
	24	Venus C. . .	.	.	. . . .	. .	. .	32 10 0.75	+ 4 30.77	+ 35.7	1 12.8	. .	83 21 28.4	. .
	25	Polaris . . .	.	2	15 54.60	. .	. .	310 10 . .	. . . .	. .	1 15.0	. .	1 19 . .	. .
	26	α Arietis . . .	.	.	. . . .	. .	. .	15 55 53.18	+ 3 10.96	+ 16.2	2 0.5	. .	67 5 41.5	— 2.3
	27	β Ursæ Min., S. P.	.	.	. . . .	. .	. .	293 30 1.95	+ 3 43.56	— 2 9.4	14 51.1	. .	344 37 57.3	— 1.3
	28	α Ceti	.	.	. . . .	. .	. .	35 12 1.02	+ 3 23.93	+ 40.1	2 56.1	. .	86 22 26.3	— 2.5
	29	α Persei . . .	.	.	. . . .	. .	. .	349 23 58.75	+ 3 17.29	— 10.6	3 15.9	. .	40 33 26.6	— 1.8
	30	γ Geminorum . .	.	.	. . . .	. .	. .	22 20 1.28	+ 3 24.81	+ 23.9	6 30.9	. .	73 30 11.2	— 1.3
	31	α Canis Majoris .	.	.	. . . .	. .	. .	55 22 2.68	+ 3 50.82	+ 1 24.0	6 40.0	. .	106 33 38.7	— 0.7
	32	51 Cephei . . .	.	7	45 39.40	. .	. .	311 38 2.22	+ 2 50.33	— 1 5.1	6 45.0	. .	2 46 8.7	— 1.1
	33	B. A. C. 2300[1] .	.	.	. . . .	. .	. .	345 53 57.88	+ 3 51.28	— 14.5	6 56.3	. .	37 3 55.9	+ 4.0
	34	B. A. C. 2300[2] .	.	.	. . . .	. .	. .	345 53 57.88	+ 3 54.39	— 14.5	6 56.3	. .	37 3 59.0	+ 4.0
	35	B. A. C. 2355 .	.	.	. . . .	. .	. .	78 12 8.38	+ 5 21.15	+ 4 33.4	7 5.0	. .	129 28 24.1	—24.7
	36	B. A. C. 2386 .	.	.	. . . .	. .	. .	68 56 0.18	+ 3 44.51	+ 2 30.3	7 9.4	. .	120 8 36.2	—23.1
	37	O. Arg. S. 6554 .	7.5	.	. . . .	. .	. .	69 28 5.42	+ 5 8.61	+ 2 34.8	7 12.4	. .	120 42 10.0	—23.3
	38	O. Arg. S. 6553 .	5.5	.	. . . .	. .	. .	69 28 5.42	+ 4 29.17	+ 2 34.7	7 12.4	. .	120 41 30.5	—23.3
	39	Piazzi VII. 103 .	6.0	.	. . . .	. .	. .	67 52 0.75	+ 3 13.99	+ 2 22.6	7 19.3	. .	119 3 58.5	—23.2
	40	B. A. C. 2458 .	2.0	.	. . . .	. .	. .	67 52 0.75	+ 4 1.96	+ 2 22.7	7 19.5	. .	119 4 46.6	—23.2
	41	α[2] Geminorum .	.	.	. . . .	. .	. .	6 42 4.85	+ 2 44.72	+ 6.9	7 27.1	. .	57 51 17.7	— 1.3
	42	α Canis Minoris .	.	.	. . . .	. .	. .	33 18 0.40	+ 3 37.70	+ 38.4	7 33.2	. .	84 28 37.7	— 1.0
	43	Lalande 14961 .	.	.	. . . .	. .	. .	24 20 1.25	+ 4 20.18	+ 26.5	7 35.3	. .	75 31 9.1	—11.0
	44	λ Ursæ Min., S. P.	.	4	40 52.30	+45.94	— 19.90	307 48 2.98	+ 3 34.09	— 1 15.0	19 41 18.34	. .	358 56 43.3	— 0.5
	45	Lalande 15290 .	7.5	.	. . . .	. .	. .	7 52 1.40	+ 3 28.88	+ 8.1	7 46.0	. .	59 1 59.6	— 5.7
	46	B. A. C. 2637 .	5.5	.	. . . .	. .	. .	74 50 4.90	+ 3 54.05	+ 3 33.0	7 48.8	. .	126 3 53.2	—25.4
	47	B. A. C. 2640 .	.	.	. . . .	. .	. .	74 20 3.85	+ 4 40.42	+ 3 26.3	7 49.9	. .	125 34 31.8	—25.3
	48	B. A. C. 2712 .	.	9	0 1.66	+ 0.37	— 19.90	71 8 1.50	+ 3 40.59	+ 2 50.0	7 59 42.13	— 1.84	122 20 53.3	—25.0
	49	Anonymous . .	10.2	9	11 30.39	— 0.78	— 19.91	356 43 59.55	+ 3 24.49	— 3.3	8 11 9.70	— 2.76	47 53 41.9	— 3.3
	50	Anonymous . .	10.8	9	23 32.41	— 0.17	— 19.91	31 50 4.70	+ 4 21.98	+ 36.5	8 23 12.33	— 2.28	83 1 24.4	—15.3

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
3	30.07	49.8	47.5
11	30.08	47.5	45.0
17	30.00	55.3	60.0
20	30.00	59.8	64.9
22	30.02	60.9	65.8
23	30.03	62.2	65.3
29	30.04	63.2	63.2
30	30.12	55.6	54.8
41	30.13	53.3	52.1

For summary of the constants of reduction see page 3.

	ZENITH-POINT CORR.	
	″	
37. One bisection.	1 to 16	+ 51.55
6, 19, 44. Three bisections.	17 to 29	+ 50.24
17, 20, 24, 26, 29, 30. Four bisections.	30 to 32	+ 50.74
32. Five bisections.	33 to 50	+ 50.11

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
6	— 25 30.3	+ 14 45.9	.	— 10 44.4
15	— 0.3	+ 1.9	.	+ 1.6
16	— 0.3	— 1.9	.	— 2.2
19	— 6.2	. .	+ 0.4	— 5.8
21	— 5.0	+ 16 0.8	.	+ 15 55.8
22	— 5.1	— 16 0.8	.	— 16 5.9
24	— 2.8	. .	0.0	— 2.8

DATE. AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
March 30, R.	1	η Cancri		9	26 15.78	− 0.36	**− 19.92**	18 0 2.42	+ 2 59.32	+ 19.1	8 25 55.51	. .	69 9 42.0	− 1.5
	2	Yarnall 3565		5	33 36.58	− 0.36	− 19.91	18 35 56.30	+ 4 11.40	+ 19.8	8 33 16.31	− 2.46	69 46 48.7	−11.4
	3	ε Hydræ		9	40 54.08	− 0.17	**− 19.96**	31 57 58.42	+ 4 15.06	+ 36.7	8 40 33.99	. .	83 9 11.4	− 1.7
	4	ι Ursæ Maj. (R)			. . . .	. .	. .	189 32 3.45	+ 4 18.12	+ 9.9	. . . .	. .	41 29 49.7	0.0
	5	ι Ursæ Majoris		4	51 31.54	− 0.97	− 19.92	350 20 2.50	+ 3 33.81	− 9.9	8 51 10.65	. .	41 29 47.6	− 2.1
	6	κ Cancri		9	1 43.91	− 0.23	**− 19.87**	27 39 59.00	+ 4 50.09	+ 30.9	9 1 23.76	. .	78 51 41.2	− 1.9
	7	D. M.+20°, 2377	9.3	3	40 21.65	− 0.36	− 19.94	18 33 58.25	+ 4 13.84	+ 19.9	9 40 1.35	− 2.70	69 44 53.2	−13.9
	8	Anonymous	10.5		. . . .	. .	. .	18 33 58.25	+ 3 42.06	+ 19.9	9 40.1	. .	69 44 21.4	−14.0
	9	79 Draconis, S. P.		9	51 39.19	+ 2.83	− 19.94	292 0 1.75	+ 4 36.75	− 2 24.4	21 51 22.08	. .	343 8 35.3	− 0.2
	10	Moon I, N.		9	1 20.49	− 0.16	− 19.94	32 25 57.95	+ 4 0.84	+ 37.6	10 1 0.39	+61.31	83 36 57.6	. .
	11	32 Ursæ Majoris		9	9 53.30	− 1.86	− 19.95	333 8 3.95	+ 4 21.29	− 29.8	10 9 31.49	. .	24 18 16.6	− 1.2
	12	9 Draconis		6	25 31.61	− 3.46	− 19.95	322 32 2.02	+ 3 11.86	− 45.2	10 25 8.20	. .	13 40 49.9	− 0.9
	13	ρ Leonis		6	26 58.71	− 0.21	**− 19.89**	28 54 4.72	+ 4 29.36	+ 32.7	10 26 38.55	. .	80 5 28.0	− 1.6
	14	Anonymous	10.5	6	36 23.16	0.00	− 19.96	45 14 5.40	+ 7 15.49	+ 59.8	10 36 3.20	− 2.76	96 28 41.9	−20.7
	15	Anonymous	10.2	9	37 32.17	0.00	− 19.96	45 14 5.40	+ 3 5.49	+ 59.7	10 37 12.21	− 2.76	96 24 31.8	−20.7
	16	Anonymous	10.5	9	51 23.20	− 0.26	− 19.96	25 34 3.28	+ 3 58.27	+ 28.4	10 51 2.98	− 2.82	76 44 51.2	−17.4
	17	Uranus I, C.		6	8 17.57	− 0.16	− 19.97	32 22 2.75	+ 3 26.40	+ 37.6	11 7 57.44	+ 0.20	83 32 28.0	. .
	18	Uranus II		5	8 17.96	− 0.16	− 19.97	32 22 . .	. . . .	. .	11 7 57.83	− 0.19	83 32 . .	. .
	19	δ Crateris		9	13 49.29	+ 0.11	**− 19.98**	52 56 1.02	+ 5 4.02	+ 1 18.5	11 13 29.43	. .	104 8 44.7	− 1.2
	20	τ Leonis		9	22 15.13	− 0.12	**− 20.03**	35 18 4.82	+ 4 47.98	+ 42.1	11 21 55.04	. .	86 29 56.1	− 1.5
	21	υ Leonis		9	31 17.34	− 0.08	**− 19.96**	39 0 4.62	+ 3 24.63	+ 48.1	11 30 57.29	. .	90 10 38.5	− 1.6
	22	β Leonis (R)			. . . .	. .	. .	156 18 9.85	+ 2 13.30	− 26.0	. . . .	. .	74 46 24.0	+ 0.2
	23	β Leonis			. . . .	. .	. .	23 36 4.32	+ 3 31.88	+ 26.0	11 43.1	. .	74 46 23.4	− 0.4
W.	24	ζ Pegasi		9	35 55.70	− 0.22	**− 20.23**	28 35 59.48	+ 4 6.68	+ 32.7	22 35 35.24	. .	79 47 0.1	− 1.4
	25	ι Cephei			. . . .	. .	. .	333 16 0.20	+ 3 20.14	− 30.1	22 45.5	. .	24 25 11.4	− 1.4
	26	α Pegasi		9	59 14.07	− 0.27	**− 20.24**	24 16 0.35	+ 2 54.35	+ 27.0	22 58 53.57	. .	75 25 42.9	− 1.4
	27	Mercury C.		9	9 22.99	0.00	− 20.23	46 44 1.10	+ 3 44.88	+ 1 3.6	23 9 2.76	− 0.06	97 55 10.8	. .
31	28	β Andromedæ		9	3 28.84	− 0.59	**− 20.11**	3 49 59.25	+ 3 50.81	+ 4.1	1 3 8.04	. .	55 0 15.4	− 0.5
	29	Polaris		6	15 50.74	−33 87	− 20.21	310 10 3.65	+ 3 45.64	− 1 10.4	1 14 56.66	. .	1 19 0.1	− 1.6
	30	Venus I, N.		6	17 44.27	− 0.18	− 20.21	31 40 3.78	+ 4 38.46	+ 36.9	1 17 23.88	+ 0.34	82 51 40.3	. .
	31	α Ceti		9	56 27.76	− 0.13	**− 20.27**	35 11 58.70	+ 3 26.16	+ 42.0	2 56 7.43	. .	86 22 28.1	− 0.7
	32	α Persei		9	16 16.37	− 0.94	**− 20.23**	349 23 54.52	+ 3 23.25	− 11.1	3 15 55.24	. .	40 33 27.9	− 0.7
	33	δ Ursæ Min., S. P.		5	10 23.18	+12.78	− 20.11	305 28 . .	. . . .	. .	18 10 15.85	. .	356 36 . .	. .
	34	B. A. C. 2129		9	27 16.27	− 0.24	− 20.13	24 33 57.18	+ 4 40.79	+ 27.3	6 26 55.90	− 1.75	75 45 26.5	− 8.0
	35	γ Geminorum		9	31 15.91	− 0.26	**− 20.15**	22 19 58.55	+ 3 27.12	+ 24.5	6 30 55.52	. .	73 30 11.4	− 1.1
	36	Weisse (2) 1227		8	42 22.77	− 0.51	− 20.14	6 5 59.08	+ 3 14.66	+ 6.4	6 42 2.12	− 2.09	57 15 41.3	− 2.1
	37	ε Canis Majoris		9	54 20.56	+ 0.29	**− 20.16**	67 36 3.35	+ 4 17.48	+ 2 24.1	6 54 0.70	. .	118 49 6.1	− 1.0
	38	Weisse (2) 1630		9	55 56.09	− 0.28	− 20.15	20 54 1.25	+ 4 1.87	+ 22.8	6 55 35.66	− 1.95	72 4 47.1	− 8.0
	39	B. A. C. 2355		9	5 14.32	+ 0.46	− 20.16	78 12 . .	. . . .	. .	7 4 54.62	− 1.28	129 28.0 .	. .
	40	B. A. C. 2386		9	9 43.59	+ 0.31	− 20.17	68 56 1.05	+ 3 40.03	+ 2 34.1	7 9 23.73	− 1.46	120 8 36.4	−23.1
	41	O. Arg. S. 6553		9	12 44.94	+ 0.32	− 20.17	69 28 0.52	+ 4 29.79	+ 2 38.6	7 12 25.09	− 1.48	120 41 30.1	−23.3
	42	B. A. C. 2458		9	19 47.08	+ 0.30	− 20.18	67 52 3.08	+ 3 55.90	+ 2 26.2	7 19 27.20	− 1.55	119 4 46.4	−23.2
	43	a^2 Geminorum		9	27 27.19	− 0.50	**− 20.16**	6 42 0.10	+ 2 48.76	+ 7.1	7 27 6.51	. .	57 51 17.2	− 1.8
	44	α Canis Minoris		9	33 29.73	− 0.13	**− 20.21**	33 17 59.58	+ 3 36.66	+ 39.3	7 33 9.41	. .	84 28 36.7	− 2.0
	45	Lalande 14961		9	35 46.48	− 0.24	− 20.19	24 19 58.80	+ 4 22.82	+ 27.1	7 35 26.05	− 2.11	75 31 9.9	−10.9
	46	Weisse (2) 1083		9	39 10.10	− 0.60	− 20.19	1 2 1.75	+ 3 31.33	+ 1.1	7 38 49.31	− 2.48	52 11 55.4	− 3.0
	47	B. A. C. 2588	6	9	42 19.37	+ 0.43	− 20.20	76 24 4.28	+ 4 39.82	+ 4 3.8	7 41 59.60	− 1.63	127 39 9.1	−25.5
	48	B. A. C. 2608		9	45 12.39	+ 0.38	− 20.20	73 43 58.20	+ 3 32.11	+ 3 22.9	7 44 52.57	− 1.68	124 57 14.4	−25.1
	49	B. A. C. 2637		9	49 4.61	+ 0.40	− 20.20	74 50 2.32	+ 3 51.13	+ 3 38.2	7 48 44.81	− 1.70	126 3 52.8	−25.4
	50	B. A. C. 2640		9	50 10.02	+ 0.39	− 20.20	74 20 3.75	+ 4 35.16	+ 3 31.2	7 49 50.21	− 1.71	125 34 31.3	−25.4

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
4	30.17	50.9	48.8
19	30.19	47.5	44.9
23	30.19	46.8	43.9
26	30.43	44.9	44.2
30	30.43	47.7	45.8
32	30.41	48.6	47.4
35	30.40	47.3	46.7

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

			″
25.	One bisection.	1 to 6	+ 50.11
12, 29.	Three bisections.	7 to 23	+ 50.74
3, 6, 10, 16, 17, 20, 21, 27.	Four bisections.	24 to 32	+ 50.06
		34 to 50	+ 50.36

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
10	− 28 51.2	+ 14 45.3	.	− 14 5.9
17	− 0.3	. . .	.	− 0.3
27	− 6.1	. . .	+ 0.4	− 5.7
30	− 2.7	+ 5.0	.	+ 2.3

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
March 31, W.	1	15 Argus		9	2 53.07	+ 0.23	— **20.27**	62 45 57.82	+ 3 58.64	+ 1 56.0	8 2 33.09	. .	113 58 13.7	— 3.5
	2	κ Cephei, S. P.	.	.	. . . .	. .	. .	296 13 58.28	+ 2 49.93	— 2 0.7	20 12.8	. .	347 21 8.7	— 1.2
	3	B. A. C. 2795	.	9	14 29.98	+ 0.40	— 20.22	75 4 4.65	+ 3 55.89	+ 3 42.0	8 14 10.16	— 1.91	126 18 3.7	—25.9
	4	B. A. C. 2819 (R)	.	.	. . . .	. .	. .	202 10 2.85	+ 2 35.41	+ 24.4	. . . .	. .	28 53 18.5	+ 2.0
	5	B. A. C. 2819	.	9	20 52.13	— 1.37	— 20.23	337 43 55.72	+ 3 24.83	— 24.4	8 20 30.53	— 3.55	28 53 17.4	+ 2.0
	6	B. A. C. 2877[1] (N)	.	5	27 24.63	+ 0.44	— 20.24	77 26 2.80	+ 3 30.67	+ 4 24.2	8 27 4.83	— 2.01	128 40 18.9	—26.4
	7	B. A. C. 2877[2] (S)	9	6	27 24.90	+ 0.44	— 20.24	77 26 2.80	+ 3 35.50	+ 4 24.3	8 27 5.10	— 2.01	128 40 23.8	—26.4
	8	ε Hydræ	6.0	9	40 54.24	— 0.14	— **20.17**	31 57 59.18	+ 4 13.15	+ 37.5	8 40 33.85	. .	83 9 11.0	— 2.1
	9	ι Ursæ Majoris	.	7	51 31.56	— 0.86	— 20.26	350 20 4.08	+ 3 32.46	— 10.2	8 51 10.71	. .	41 29 47.5	— 2.1
April 1, E.	10	Sun, N.	.	.	. . . .	. .	. .	33 52 7.35	+ 3 6.08	+ 38.9	0 43.7	. .	85 2 13.5	. .
	11	Sun, S.	.	.	. . . .	. .	. .	34 24 4.62	+ 3 10.13	+ 39.7	0 43.7	. .	85 34 15.7	. .
	12	Polaris	.	5	15 50.72	—32.61	. .	310 10 2.72	+ 3 44.63	— 1 8.1	1 15.0	. .	1 19 0.5	— 1.5
	13	δ^1 Geminorum	.	6	13 26.77	— 0.52	— 19.92	16 38 4.08	+ 3 35.07	+ 17.2	7 13 6.33	— 2.07	67 48 17.6	— 7.2
	14	δ^2 Geminorum	.	5	13 27.02	— 0.52	— **19.92**	16 38 4.08	+ 3 28.50	+ 17.2	7 13 6.58	. .	67 48 11.0	— 2.7
	15	α^1 Geminorum	.	6	27 26.70	— 0.68	— 19.92	6 42 5.70	+ 2 45.90	+ 6.8	7 27 6.10	— 2.29	57 51 19.6	— 4.3
	16	α^2 Geminorum	.	5	27 27.11	— 0.68	— **19.92**	6 42 5.70	+ 2 42.72	+ 6.8	7 27 6.51	. .	57 51 16.4	— 2.5
	17	α Canis Minoris	.	9	33 29.63	— 0.30	**19.93**	33 17 59.25	+ 3 38.28	+ 37.8	7 33 9.41	. .	84 28 36.5	— 2.2
	18	λ Ursæ Min., S. P.	.	4	40 59.40	+43.82	— 19.92	307 48 1.75	+ 3 30.35	— 1 13.7	19 41 23.30	. .	358 56 39.6	— 4.0
	19	Anonymous	11.0	9	11 30.40	— 0.88	— 19.92	356 44 8.35	+ 3 16.76	— 3.2	8 11 9.60	— 2.70	47 53 43.1	— 3.0
	20	O. Arg. N. 8887	8.5	9	15 14.64	— 1.14	— 19.92	347 46 2.65	+ 4 16.78	— 12.4	8 14 53.58	— 2.99	38 56 28.2	— 0.4
7, R.	21	α Leonis	.	9	2 30.46	— 0.51	— **22.13**	26 16 1.60	+ 4 46.92	+ 28.2	10 2 7.80	. .	77 27 37.9	— 2.1
	22	γ^1 Leonis	2	6	13 53.45	— 0.62	— **22.18**	18 22 7.78	+ 5 8.17	+ 19.0	10 13 30.67	. .	69 33 56.2	— 1.7
	23	γ^2 Leonis	6.5	5	13 53.74	— 0.62	— 22.16	18 22 7.78	+ 5 9.39	+ 19.0	10 13 30.96	— 2.69	69 33 57.4	—14.2
	24	9 Draconis	.	7	25 33.27	— 3.45	— 22.17	322 32 6.32	+ 3 1.86	— 43.6	10 25 7.65	. .	13 40 45.8	— 3.0
	25	226 Cephei, S. P.	.	9	30 28.79	+ 2.85	— 22.18	294 28 3.32	+ 4 41.60	— 2 4.1	22 30 9.46	. .	345 37 2.0	— 1.8
	26	α Ursæ Maj. (R)	.	.	. . . .	. .	. .	203 26 4.68	+ 3 1.78	+ 24.8	. . . .	. .	27 36 49.9	0.0
	27	α Ursæ Majoris	.	5	56 53.97	— 1.75	— 22.20	336 28 5.38	+ 2 46.63	— 24.8	10 56 30.02	. .	27 36 48.4	— 1.5
	28	α^1 Canum Venat.	7	6	50 55.35	— 0.92	— 22.30	359 52 7.22	+ 4 35.70	— 0.1	12 50 32.13	— 2.99	51 3 4.0	—14.6
	29	α^2 Canum Venat.	.	5	50 56.65	— 0.92	— **22.29**	359 52 7.22	+ 4 23.21	— 0.1	12 50 33.43	. .	51 2 51.5	— 2.1
	30	θ Virginis	.	5	4 16.19	— 0.31	— **22.41**	43 44 4.02	+ 3 26.94	+ 54.8	13 3 53.57	. .	94 54 47.0	— 2.0
	31	Polaris, S. P.	.	6	14 46.27	+33.74	— 22.32	307 32 7.70	+ 3 37.61	— 1 14.2	1 14 57.69	. .	358 40 52.3	— 3.5
	32	α Virginis	.	9	19 24.24	— 0.25	— **22.24**	49 22 5.42	+ 3 24.01	+ 1 6.8	13 19 1.66	. .	100 32 57.4	— 1.6
11, R.	33	9 Draconis	.	4	25 34.27	— 2.28	— 24.24	322 31 58.85	+ 3 13.81	— 46.4	10 25 7.75	. .	13 40 47.5	— 0.5
	34	ρ Leonis	.	9	27 2.98	— 0.23	— **24.25**	28 54 0.92	+ 4 32.27	+ 33.6	10 26 38.51	. .	80 5 28.0	— 1.1
	35	Anonymous	10.2	9	37 36.31	— 0.09	— 24.24	45 15 58.75	+ 1 10.61	+ 1 1.2	10 37 11.98	— 2.67	96 24 31.8	—21.1
	36	B.VI, + 11°, 2284	10.0	9	43 44.39	— 0.25	— 24.24	27 7 56.92	+ 4 9.87	+ 31.2	10 43 19.90	— 2.71	78 18 59.2	—16.9
	37	Anonymous	10.5	8	44 5.24	— 0.25	— 24.24	27 7 56.92	+ 2 57.47	+ 31.1	10 43 40.75	— 2.71	78 17 46.7	—16.9
	38	D. M. + 11°, 2286	9.2	8	44 29.14	— 0.25	— 24.24	27 7 56.92	+ 3 4.67	+ 31.1	10 44 4.65	— 2.71	78 17 53.9	—16.9
	39	Uranus I, C.	.	6	6 47.35	— 0.21	— 24.24	32 12 1.95	+ 3 52.12	+ 38.3	11 6 22.90	+ 0.14	83 22 53.6	. .
	40	Uranus II.	.	5	6 47.64	— 0.21	— 24.24	32 12 . .	. . .	. .	11 6 23.19	— 0.15	83 23 . .	. .
	41	δ Crateris	.	9	13 53.66	— 0.03	— **24.26**	52 55 57.62	+ 5 4.75	+ 1 20.4	11 13 29.39	. .	104 8 44.0	— 2.8
	42	τ Leonis	.	9	22 19.38	— 0.18	— **24.27**	35 18 1.12	+ 4 48.65	+ 43.1	11 21 54.96	. .	86 29 54.1	— 3.3
	43	λ Draconis	.	9	24 53.28	— 1.56	— 24.24	328 52 3.10	+ 3 19.23	— 36.6	11 24 27.48	. .	20 1 6.9	— 2.1
	44	ν Leonis	.	8	31 21.62	— 0.15	— **24.20**	39 0 0.18	+ 3 27.98	+ 49.2	11 30 57.23	. .	90 10 38.6	— 1.5
	45	β Leonis (R)	.	.	. . . .	. .	. .	156 18 7.22	+ 2 17.84	— 26.6	. . . .	. .	74 46 22.7	— 0.1
	46	β Leonis	.	.	. . . .	. .	. .	23 35 56.08	+ 3 37.98	+ 26.6	11 43.1	. .	74 46 21.9	— 0.9
W.	47	ζ Pegasi	.	9	36 0.01	— 0.39	— **24.14**	28 35 59.78	+ 4 3.14	+ 32.8	22 35 35.46	. .	79 46 56.9	— 4.2
	48	ι Cephei	.	9	45 53.73	— 0.97	— 24.16	333 16 3.72	+ 3 17.36	— 30.1	22 45 28.60	. .	24 25 12.2	— 3.0
	49	α Pegasi	.	9	59 18.36	— 0.41	— **24.17**	24 15 58.35	+ 2 54.68	+ 27.0	22 58 53.78	. .	75 25 41.2	— 3.1
	50	α Andromedæ	.	9	2 42.67	— 0.48	— **24.21**	10 24 0.62	+ 3 3.35	+ 11.0	0 2 18.01	. .	61 33 36.2	— 2.7

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
9	30.41	45.3	42.2		ZENITH-POINT CORR.	10	— 4.9	+ 16 1.0	.	+ 15 56.1
11	30.30	54.7	58.6		″	11	— 5.0	— 16 1.1	.	— 16 6.1
18	30.12	61.0	60.0			39	— 0.3	. .	.	— 0.3
21	30.01	61.7	61.6	37, 42. One bisection.	1 to 9 + 50.36					
30	30.01	60.3	59.2	43. Three bisections.	10 to 12 + 50.30					
38	29.98	32.3	30.4	21, 41. Four bisections.	13 to 20 + 49.11					
46	29.98	32.2	30.1	31. Five bisections.	21 to 32 + 50.69					
47	30.04	35.9	37.2		33 to 46 + 52.37					
					47 to 50 + 49.85					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
April 11, W.	1	γ Pegasi		9	7 34.82	− 0.41	**− 24.17**	24 18 2.20	+ 3 25.95	+ 26.9	0 7 10.23	. .	75 28 16.3	− 2.7
	2	Mercury II, N.		9	17 25.67	− 0.34	− 24.18	39 36 4.18	+ 4 8.92	+ 49.2	0 17 1.15	− 0.19	90 47 23.5	. .
	3	Polaris		5	15 36.20	−13.81	− 24.20	310 9 58.85	+ 3 52.45	− 1 9.7	1 14 58.19	. .	1 19 2.8	− 2.6
12	4	Sun I, N.		9	23 12.38	− 0.38	− 24.20	29 43 59.10	+ 3 36.61	+ 33.8	1 22 47.80	+64.85	80 54 30.7	. .
	5	Sun II, S.		9	25 22.08	− 0.38	− 24.20	30 15 58.72	+ 3 34.31	+ 34.5	1 24 57.50	−64.85	81 26 28.7	. .
	6	α Ceti		9	56 31.87	− 0.36	**− 24.21**	35 12 1.88	+ 3 22.70	+ 41.2	2 56 7.29	. .	86 22 27.0	− 1.4
	7	α Persei		9	16 20.08	− 0.66	− 24.22	349 24 1.42	+ 3 18.45	− 10.9	3 15 55.20	. .	40 33 30.2	− 0.5
	8	δ Persei		9	34 57.54	− 0.64	− 24.23	351 26 5.20	+ 3 2.96	− 8.7	3 34 32.67	. .	42 35 20.7	− 2.4
	9	η Tauri		9	40 53.82	− 0.46	**− 24.20**	15 5 58.50	+ 3 0.85	+ 15.8	3 40 29.13	. .	66 15 36.4	− 2.7
	10	ζ Persei		9	47 8.72	− 0.50	**− 24.26**	7 18 1.75	+ 3 31.43	+ 7.5	3 46 43.99	. .	58 28 1.9	− 1.6
	11	12-Yr. Cat., 1879, S.P.		9	53 14.26	+ 1.74	− 24.18	298 57 56.08	+ 3 53.17	− 1 45.4	20 52 51.82	. .	350 6 25.0	+ 1.0
	12	κ Cancri		9	1 48.24	− 0.46	**− 24.17**	27 42 1.40	+ 2 48.51	+ 30.9	9 1 23.60	. .	78 51 42.0	− 0.7
	13	α Hydræ		9	22 14.24	− 0.36	**− 24.28**	46 58 0.58	+ 3 47.47	+ 1 3.2	9 21 49.70	. .	98 9 12.4	− 1.0
	14	β Cephei, S. P.		4	27 31.10	+ 0.68	− 24.18	288 55 58.58	+ 2 57.43	− 2 49.5	21 27 7.57	. .	340 2 27.7	+ 0.7
	15	D. M. +21°, 2106		9	41 9.30	− 0.52	− 24.18	17 25 58.22	+ 3 48.94	+ 18.6	9 40 44.60	− 2.54	68 36 27.0	−12.7
	16	μ Leonis		9	46 30.39	− 0.55	**− 24.18**	12 16 1.72	+ 3 51.50	+ 12.9	9 46 5.66	. .	63 26 27.3	− 0.6
	17	B. A. C. 3415 (R)		.	. . . .	. .	. .	149 40 4.82	+ 3 6.92	− 34.5	. . . .	. .	81 23 44.0	−16.9
	18	B. A. C. 3415		.	. . . .	. .	. .	30 12 3.72	+ 4 40.59	+ 34.5	9 54.0 . .	. .	81 23 40.0	−16.9
	19	α Leonis		9	2 32.41	− 0.47	**− 24.18**	26 15 57.78	+ 4 50.67	+ 29.3	10 2 7.76	. .	77 27 38.9	− 0.8
	20	32 Ursæ Maj. (R)		.	. . . .	. .	. .	206 43 56.50	+ 3 37.90	+ 29.9	. . . .	. .	24 18 16.9	+ 1.7
	21	32 Ursæ Majoris		5	9 56.43	− 1.14	− 24.18	333 7 59.95	+ 4 22.72	− 29.9	10 9 31.11	. .	24 18 14.0	− 1.2
	22	ρ Leonis		8	27 3.07	− 0.46	**− 24.12**	28 53 59.40	+ 4 33.81	+ 32.8	10 26 38.43	. .	80 5 27.2	− 1.8
	23	α Cephei		9	16 10.79	− 0.90	− 24.09	336 46 12.12	+ 2 51.01	− 25.5	21 15 45.80	. .	27 54 58.8	+ 0.3
	24	β Aquarii		9	25 46.47	− 0.33	**− 24.10**	44 54 7.60	+ 3 47.56	+ 59.3	21 25 22.05	. .	96 5 15.7	− 1.2
	25	Moon II, N.		5	39 2.00	− 0.31	− 24.09	48 2 0.40	+ 3 15.35	+ 1 6.0	21 38 37.60	−68.81	99 12 43.0	. .
	26	α Aquarii		9	0 8.89	− 0.35	**− 24.11**	39 42 4.10	+ 4 13.52	+ 49.2	21 59 44.45	. .	90 53 28.0	− 0.7
	27	π^2 Pegasi		9	5 10.12	− 0.52	− 24.09	6 14 5.70	+ 3 29.73	+ 6.5	22 4 45.51	− 0.80	57 24 3.1	− 2.6
	28	ζ Pegasi		9	35 59.97	− 0.40	**− 24.07**	28 36 4.28	+ 4 1.13	+ 32.2	22 35 35.48	. .	79 46 58.8	− 2.3
R.	29	α Piscis Australis		9	51 32.61	− 0.48	**− 23.79**	69 2 1.55	+ 3 41.22	+ 2 32.9	22 51 8.42	. .	120 14 36.9	− 1.2
	30	α Pegasi		9	59 18.04	− 0.62	**− 23.62**	24 15 56.18	+ 2 58.02	+ 26.6	22 58 53.71	. .	75 25 42.0	− 2.2
	31	γ Cephei		3	34 54.15	− 1.73	− 23.70	321 52 1.78	+ 3 56.49	− 45.8	23 34 28.72	. .	13 1 33.7	− 0.4
	32	α Andromedæ		9	2 42.38	− 0.68	**− 23.71**	10 23 55.08	+ 3 10.04	+ 10.8	0 2 18.00	. .	61 33 37.1	− 1.9
	33	γ Pegasi		9	7 34.56	− 0.62	**− 23.68**	24 18 4.10	+ 3 25.35	+ 26.4	0 7 10.25	. .	75 28 17.0	− 2.0
	34	Mercury II, C.		9	23 36.83	− 0.57	− 23.69	38 53 55.80	+ 3 31.97	+ 47.1	0 23 12.57	− 0.19	90 4 36.1	. .
	35	Polaris		8	15 33.56	13.12	− 23.68	310 9 58.15	+ 3 54.14	− 1 8.6	1 14 56.76	. .	1 19 4.9	− 0.8
13	36	Sun I, N.		9	26 52.93	− 0.60	− 23.68	29 22 7.40	+ 3 43.66	+ 32.7	1 26 28.65	+64.87	80 32 45.0	. .
	37	Sun II, S.		9	29 2.67	− 0.60	− 23.68	29 53 54.88	+ 3 52.56	+ 33.5	1 28 38.39	−64.87	81 4 42.1	. .
	38	Venus I, C.		6	18 19.32	− 0.62	− 23.66	25 33 51.35	+ 4 39.21	+ 27.7	2 17 55.04	+ 0.37	76 45 19.5	. .
	39	Venus II.		5	18 20.04	− 0.62	− 23.66	25 34 . .	. . . .	. .	2 17 55.76	− 0.35	76 45 . .	. .
	40	α Ceti		9	56 31.52	− 0.58	**− 23.64**	35 11 58.45	+ 3 26.74	+ 40.6	2 56 7.29	. .	86 22 27.0	− 1.3
	41	α Persei		9	16 19.58	− 0.84	− 23.65	349 23 57.32	+ 3 21.60	− 10.7	3 15 55.09	. .	40 33 29.4	− 1.6
	42	δ Persei		9	34 57.12	− 0.82	− 23.65	351 26 4.60	+ 3 4.06	− 8.6	3 34 32.65	. .	42 35 21.3	− 2.0
	43	η Tauri		9	40 53.51	− 0.66	**− 23.70**	15 5 55.02	+ 3 6.14	+ 15.5	3 40 29.20	. .	66 15 37.9	− 1.2
	44	ζ Persei		9	47 8.27	− 0.70	**− 23.62**	7 18 5.58	+ 3 27.21	+ 7.4	3 46 43.92	. .	58 28 1.4	− 2.2
	45	Uranus I, C.		6	6 33.10	− 0.56	− 23.83	32 10 0.95	+ 4 29.84	+ 36.9	11 6 8.71	+ 0.19	83 21 28.9	. .
	46	Uranus II		5	6 33.48	− 0.56	− 23.83	32 10 . .	. . . .	. .	11 6 9.09	− 0.19	83 21 . .	. .
	47	υ Leonis		9	31 21.60	− 0.54	**− 23.80**	38 59 59.42	+ 3 29.78	+ 47.6	11 30 57.26	. .	90 10 38.0	− 2.1
	48	γ Cephei, S. P.		9	34 51.64	+ 0.71	− 23.80	295 50 3.88	+ 3 59.79	− 2 0.2	23 34 28.55	. .	346 58 24.7	− 1.1
	49	Amalthaea		9	42 18.54	− 0.58	− 23.79	28 26 3.10	+ 3 38.71	+ 31.8	11 41 54.17	. .	79 36 34.8	− 3.3
	50	ο Virginis		9	59 39.10	− 0.58	**− 23.77**	29 25 56.55	+ 4 6.96	+ 33.2	11 59 14.75	. .	80 36 57.9	− 1.4

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
1	30.03	40.0	41.3
5	29.98	43.8	43.8
6	29.98	48.0	49.1
10	29.96	49.8	49.7
11	29.93	45.9	45.5
22	29.96	42.9	40.8
23	29.96	38.6	39.4
27	29.97	41.0	42.8
30	29.97	43.4	45.4
33	29.95	47.3	48.7
34	29.94	48.2	49.1
37	29.92	49.6	50.8
40	29.91	53.3	54.9
44	29.90	54.4	56.1
45	29.93	48.4	46.4

For summary of the constants of reduction see page 3.

21. One bisection.
3, 48. Three bisections.
2, 30, 33, 34, 38, 41, 47, 49, 50. } Four bisections.
35. Five bisections.

ZENITH-POINT CORR.

1 to 10	+ 49.85
11 to 28	+ 52.93
29 to 44	+ 50.38
45 to 50	+ 51.66

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
2	− 4.6	+ 2.8	.	− 1.8
4	− 4.4	+ 15 59.0	.	+ 15 54.6
5	− 4.4	− 15 59.0	.	− 16 3.4
25	− 44 24.1	+ 16 21.2	.	− 28 2.9
34	− 4.6	. . .	+0.2	− 4.4
36	− 4.3	+ 15 58.5	.	+ 15 54.2
37	− 4.4	− 15 58.5	.	− 16 2.9
38	− 2.3	. . .	0.0	− 2.3
45	− 0.3	. . .	.	− 0.3

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
April														
13, R.	1	4 Draconis		9	7 10.91	− 1.75	− 23.77	320 34 4.15	+ 4 6.97	− 48.2	12 6 45.39	. .	11 43 44.1	− 2.0
	2	η Virginis		9	14 19.40	− 0.54	− 23.77	38 50 6.42	+ 3 41.00	+ 47.4	12 13 55.10	. .	90 0 56.0	− 2.3
	3	B. A. C. 4195 (R)			. . . .	. .	. .	169 58 8.05	+ 3 36.64	− 10.3	. . . .	. .	61 4 46.8	−14.4
	4	B. A. C. 4195			. . . .	. .	. .	9 54 2.65	+ 4 10.57	+ 10.3	12 21.1	. .	61 4 44.7	−14.4
	5	θ Virginis		7	4 17.73	− 0.53	− 23.70	43 44 3.15	+ 3 27.63	+ 56.5	13 3 53.49	. .	94 54 48.5	− 0.5
	6	Polaris s. p.		8	15 11.19	+11.17	− 23.70	307 32 8.18	+ 3 39.46	− 1 10.5	1 14 58.66	. .	358 40 52.3	− 1.9
	7	ζ Virginis		9	29 8.14	− 0.54	− 23.72	38 48 4.90	+ 4 32.60	+ 47.6	13 28 43.92	. .	89 59 46.3	− 2.0
	8	Hertha		5	36 48.16	− 0.50	− 23.68	51 36 5.50	+ 3 27.95	+ 1 14.6	13 36 23.98	. .	102 47 9.2	− 4.5
	9	η Ursæ Maj. (R)			. . . .	. .	. .	190 56 3.42	+ 4 2.39	+ 11.5	. . . .	. .	40 6 3.9	− 0.3
	10	η Ursæ Majoris			. . . .	. .	. .	348 55 58.92	+ 3 53.87	− 11.5	13 42.9	. .	40 6 2.5	− 1.7
	11	α Bootis		9	10 43.88	− 0.61	− 23.64	19 2 3.15	+ 3 39.47	+ 20.5	14 10 19.63	. .	70 12 24.3	− 1.4
	12	ρ Bootis		9	27 11.81	− 0.67	− 23.60	7 56 2.92	+ 4 17.83	+ 8.3	14 26 47.52	. .	59 6 50.3	− 1.0
	13	5 Ursæ Minoris		3	28 16.75	− 1.56	− 23.62	322 37 59.95	+ 3 21.04	− 45.2	14 27 51.57	. .	13 46 57.0	− 1.2
14, S.	14	ε Hydræ		3	40 57.83	− 0.48	− 23.63	31 58 . .	. . .	. .	8 40 33.70	. .	83 9 . .	. .
	15	ι Ursæ Majoris		9	51 34.56	− 0.80	23.65	350 20 . .	. . .	. .	8 51 10.11	. .	41 30 . .	. .
	16	κ Cancri		9	1 47.72	− 0.50	− 23.64	27 42 . .	. . .	. .	9 1 23.58	. .	78 52 . .	. .
	17	α Hydræ		9	22 13.63	− 0.40	− 23.66	46 58 . .	. . .	. .	9 21 49.59	. .	98 9 . .	. .
	18	ε Leonis		9	39 35.84	− 0.58	− 23.63	14 30 . .	. . .	. .	9 39 11.62	. .	65 41 . .	. .
	19	μ Leonis		9	46 29.83	− 0.59	− 23.61	12 16 . .	. . .	. .	9 46 5.61	. .	63 26 . .	. .
	20	α Leonis		9	2 31.90	− 0.50	− 23.66	26 16 . .	. . .	. .	10 2 7.77	. .	77 28 . .	. .
16, E.	21	α Piscis Australis		9	51 32.13	− 0.50	− 23.04	69 2 4.00	+ 3 38.88	+ 2 30.8	22 51 8.59	. .	120 14 34.9	− 2.3
	22	α Pegasi		9	59 17.60	− 0.68	− 23.04	24 15 53.12	+ 3 1.77	+ 26.2	22 58 53.88	. .	75 25 42.3	− 1.7
	23	γ Cephei		9	34 54.03	− 2.17	− 23.04	321 52 9.58	+ 3 47.18	− 45.3	23 34 28.82	. .	13 1 32.7	− 2.4
	24	α Andromedæ		9	2 41.88	− 0.77	− 23.05	10 24 4.80	+ 3 0.24	+ 10.7	0 2 18.07	. .	61 33 36.9	− 2.3
	25	γ Pegasi		9	7 34.04	− 0.68	− 23.04	24 18 0.92	+ 3 28.65	+ 26.1	0 7 10.32	. .	75 28 16.9	− 2.0
	26	Mercury, II, N.		9	49 15.92	− 0.63	− 23.04	35 52 9.18	+ 4 20.70	+ 41.7	0 48 52.25	− 0.18	87 3 32.8	. .
	27	Polaris		9	15 38.44	−17.31	− 23.04	310 10 9.02	+ 3 40.68	− 1 7.8	1 14 58.09	. .	1 19 3.1	− 4.0
17,	28	Sun I, N.		9	41 39.68	− 0.66	− 23.04	27 56 2.30	+ 4 23.84	+ 30.5	1 41 15.98	+65.10	79 7 17.8	. .
	29	Sun II, S.		9	43 49.87	− 0.66	− 23.04	28 28 2.80	+ 4 17.17	+ 31.2	1 43 26.17	−65.09	79 39 12.4	. .
	30	Venus I, S.		9	37 24.30	− 0.68	− 23.05	23 52 5.02	+ 3 26.02	+ 25.4	2 37 0.57	+ 0.36	75 2 17.6	. .
	31	Venus N.			. . . .	. .	. .	23 52 5.02	+ 3 15.09	+ 25.3	2 37 . .	. .	75 2 6.6	. .
	32	η Tauri			. . . .	. .	. .	15 6 0.10	+ 3 0.23	+ 15.4	3 40.5	. .	66 15 36.9	− 2.5
	33	ζ Persei		9	47 7.81	− 0.79	− 23.10	7 18 7.80	+ 3 27.51	+ 7.4	3 46 43.97	. .	58 28 3.9	− 0.1
	34	α Tauri		9	29 33.73	− 0.69	− 23.05	22 34 6.08	+ 2 56.01	+ 23.7	4 29 9.99	. .	73 43 47.0	− 0.4
	35	ι Aurigæ		9	49 43.61	− 0.80	− 23.00	5 52 13.85	+ 2 36.61	+ 5.9	4 49 19.76	. .	57 1 17.6	− 1.8
	36	ε Hydræ		9	40 57.31	− 0.64	− 23.00	31 58 5.58	+ 4 7.51	+ 35.9	8 40 33.67	. .	83 9 10.2	− 2.5
	37	σ^2 Cancri		9	47 28.81	− 0.78	− 23.00	7 48 10.02	+ 3 55.27	+ 7.9	8 47 5.03	− 2.33	58 58 34.4	− 7.2
	38	12-Yr. Cat., 1879, s.p.		9	53 13.11	+ 1.70	− 23.00	298 58 6.02	+ 3 37.68	− 1 43.1	20 52 51.81	. .	350 6 21.8	− 1.8
	39	κ Cancri		9	1 47.23	− 0.66	− 23.03	27 42 6.05	+ 2 43.11	+ 30.2	9 1 23.56	. .	78 51 40.6	− 1.9
	40	B. A. C. 3146		9	8 39.30	− 0.62	− 23.01	36 0 7.55	+ 4 23.67	+ 41.9	9 8 15.67	− 2.17	87 11 34.3	−17.5
	41	B. A. C. 3162^1	9	6	11 56.10	− 0.84	− 23.01	1 32 9.25	+ 3 30.12	+ 1.6	9 11 32.25	− 2.52	52 42 2.2	− 6.0
	42	B. A. C. 3162^2		5	11 56.35	− 0.84	− 23.01	1 32 9.25	+ 3 28.60	+ 1.6	9 11 32.50	− 2.52	52 42 0.6	− 6.0
	43	α Cephei s. p.		9	16 8.78	+ 0.27	− 23.01	281 0 2.42	+ 3 20.96	− 4 46.1	21 15 46.04	. .	332 4 58.5	− 2.7
	44	α Hydræ		9	22 13.09	− 0.57	− 22.99	46 58 5.55	+ 3 43.00	+ 1 1.8	9 21 49.51	. .	98 9 11.6	− 1.9
	45	10 Leonis Minoris		9	27 26.01	− 0.83	− 23.01	1 54 8.90	+ 4 18.99	+ 2.0	9 27 2.17	− 2.58	53 4 51.1	− 6.6
	46	B. A. C. 3303		9	34 15.70	− 0.61	− 23.02	39 26 7.20	+ 3 28.42	+ 47.5	9 33 52.07	− 2.29	90 36 44.3	−19.1
	47	D. M. +20°, 2377		6	40 24.73	− 0.71	− 23.02	18 34 5.20	+ 4 4.59	+ 19.5	9 40 1.00	− 2.44	69 44 50.5	−12.5
	48	Anonymous		5	40 28.70	− 0.71	− 23.02	18 34 5.20	+ 3 33.41	+ 19.4	9 40 4.97	− 2.44	69 44 19.2	−12.5
	49	B. A. C. 3453 (R)			. . . .	. .	. .	158 24 10.90	+ 2 37.51	− 22.8	. . . .	. .	72 40 0.6	−14.0
	50	B. A. C. 3453			. . . .	. .	. .	21 30 10.15	+ 3 2.33	+ 22.8	10 0.0	. .	72 39 56.5	−14.0

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
4	29.94	46.7	44.8
10	29.96	44.7	42.2
13	29.97	43.8	40.8
22	30.23	52.0	56.0
29	30.21	58.8	61.8
33	30.18	63.5	65.0
35	30.15	63.5	65.3
36	30.13	60.0	59.7

For summary of the constants of reduction see page 3.

1, 27. Three bisections.
2, 11, 40. Four bisections.
6. Five bisections.

ZENITH-POINT CORR.

1 to 13 + 51.66
21 to 35 + 48.74
36 to 50 + 50.76

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
26	− 4.1	+ 2.6	.	− 1.5
28	− 4.1	+ 15 57.2	.	+ 15 53.1
29	− 4.2	− 15 57.3	.	− 16 1.5
30	− 2.2	− 5.5	.	− 7.7
31	− 2.2	+ 5.5	0.0	+ 3.3

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
April 17, E.	1	Anonymous		9	51 26.86	− 0.67	− 23.04	25 34 7.42	+ 3 59.38	+ 27.8	10 51 3.15	− 2.67	76 44 55.8	−16.0
	2	Uranus I, C.		6	6 6.15	− 0.64	− 23.04	32 8 6.90	+ 3 45.93	+ 36.6	11 5 42.47	+ 0.23	83 18 50.6	. .
	3	Uranus II.		5	6 6.62	− 0.64	− 23.04	32 8 . .	. . .	. .	11 5 42.94	− 0.24	. . . .	. .
	4	λ Draconis (R)		.	. . . .	. .	. .	211 2 10.02	+ 2 28.61	+ 35.1	. . . .	. .	20 1 7.5	0.0
	5	λ Draconis		5	24 52.07	− 1.55	− 23.05	328 52 7.60	+ 3 12.36	− 35.1	11 24 27.47	. .	20 1 6.1	− 1.4
	6	γ Cephei, S. P.		9	34 51.09	+ 1.18	− 23.05	295 50 10.12	+ 3 52.86	− 1 59.4	23 34 29.22	. .	346 58 24.8	+ 0.1
	7	Amalthæa		9	40 26.63	− 0.66	− 23.05	28 20 9.78	+ 1 47.85	+ 31.5	11 40 2.92	. .	79 28 50.3	− 3.2
	8	o Virginis		9	59 38.43	− 0.65	− 23.04	29 26 8.92	+ 3 52.90	+ 33.0	11 59 14.73	. .	80 36 56.0	− 2.9
	9	η Virginis		9	14 18.74	− 0.61	− 23.05	38 50 15.10	+ 3 31.25	+ 47.1	12 13 55.07	. .	90 0 54.7	− 3.5
	10	B. A. C. 4367		9	56 44.74	− 0.66	− 23.07	27 14 6.08	+ 3 38.71	+ 30.3	12 56 21.01	− 2.94	78 24 36.3	−16.3
	11	θ Virginis		9	4 17.20	− 0.59	− 23.09	43 44 8.72	+ 3 19.44	+ 56.2	13 3 53.54	. .	94 54 45.6	− 3.5
	12	Polaris, S. P.		7	15 5.24	+15.99	− 23.07	307 32 5.80	+ 3 39.87	− 1 16.2	1 14 58.16	. .	358 40 50.7	− 2.1
W.	13	γ Cephei		9	34 54.54	− 2.58	− 23.15	321 52 19.85	+ 3 38.50	− 44.8	23 34 28.81	. .	13 1 34.8	− 0.7
	14	α Andromedæ		9	2 42.01	− 0.81	− 23.12	10 24 14.00	+ 2 51.67	+ 10.5	0 2 18.05	. .	61 33 37.4	− 1.9
	15	Mercury II, C.		9	55 55.36	− 0.63	− 23.17	35 6 12.98	+ 2 54.33	+ 40.1	0 55 31.56	− 0.18	86 16 8.6	. .
	16	β Andromedæ		9	3 32.37	− 0.87	− 23.20	3 50 15.70	+ 3 36.78	+ 3.9	1 3 8.33	. .	55 0 17.6	− 0.6
	17	Polaris		9	15 43.92	−21.67	− 23.17	310 10 12.52	+ 3 36.96	− 1 7.2	1 14 59.08	. .	1 19 3.5	− 3.9
18	18	Sun I, N.		9	45 22.70	− 0.67	− 23.18	27 36 12.98	+ 3 18.69	+ 29.8	1 44 58.85	+65.06	78 46 22.7	. .
	19	Sun II, S.		9	47 32.82	− 0.67	− 23.18	28 8 14.85	+ 3 10.56	+ 30.4	1 47 8.97	−65.06	79 18 17.0	. .
	20	α Ceti		9	56 31.16	− 0.63	− 23.24	35 12 9.78	+ 3 16.87	+ 39.9	2 56 7.34	. .	86 22 27.7	− 0.3
	21	α Persei		9	16 19.40	− 1.08	− 23.20	349 24 10.10	+ 3 11.24	− 10.5	3 15 55.12	. .	40 33 32.0	+ 0.1
	22	η Tauri		9	40 53.08	− 0.77	− 23.18	15 6 9.62	+ 2 52.55	+ 15.2	3 40 29.11	. .	66 15 38.6	− 0.8
	23	ζ Persei		9	47 7.93	− 0.84	− 23.18	7 18 9.75	+ 3 25.38	+ 7.3	3 46 43.88	. .	58 28 3.6	− 0.5
	24	ε Persei		9	50 21.33	− 0.93	− 23.21	359 10 13.88	+ 3 18.94	− 0.8	3 49 57.19	− 0.97	50 19 53.2	+ 2.9
	25	β Cephei, S. P.		7	27 30.31	+ 0.87	− 23.19	288 56 10.58	+ 2 39.87	− 2 45.0	21 27 7.99	. .	340 2 26.6	+ 0.1
	26	o Leonis		9	35 17.39	− 0.65	− 23.20	28 24 8.32	+ 3 30.81	+ 31.1	9 34 53.54	− 2.33	79 34 31.4	−15.6
	27	D. M. + 20°, 2377		5	40 25.15	− 0.72	− 23.21	18 34 9.92	+ 4 1.89	+ 19.3	9 40 1.22	− 2.42	69 44 52.3	−12.5
	28	Anonymous		2	40 28.67	− 0.72	− 23.21	18 34 9.92	+ 3 22.63	+ 19.3	9 40 4.74	− 2.42	69 44 13.1	−12.5
	29	μ Leonis		9	46 29.54	− 0.77	− 23.20	12 16 14.65	+ 3 38.01	+ 12.5	9 46 5.56	. .	63 26 26.4	− 1.0
	30	α Leonis		9	2 31.64	− 0.66	− 23.29	26 16 13.15	+ 4 34.60	+ 28.4	10 2 7.75	. .	77 27 37.4	− 2.1
	31	γ^1 Leonis		6	13 54.43	− 0.72	− 23.20	18 22 13.88	+ 5 0.94	+ 19.2	10 13 30.46	. .	69 33 55.2	− 1.7
	32	γ^2 Leonis		5	13 54.76	− 0.72	− 23.25	18 22 13.88	+ 5 3.03	+ 19.2	10 13 30.79	− 2.56	69 33 57.3	−13.2
	33	9 Draconis		9	25 32.92	− 2.39	− 23.26	322 32 9.75	+ 2 58.36	− 44.0	10 25 7.27	. .	13 40 45.3	− 1.3
	34	226 Cephei, S. P.		9	30 32.47	+ 1.40	− 23.26	294 28 15.12	+ 4 29.92	− 2 5.2	22 30 10.61	. .	345 37 1.0	− 0.8
	35	D. M. + 11°, 2286	10	9	44 28.78	− 0.66	− 23.28	27 6 12.95	+ 4 51.95	+ 29.5	10 44 4.84	− 2.62	78 17 55.6	−16.3
	36	ι Cephei, S. P.		3	45 51.53	+ 0.61	− 23.28	284 28 9.90	+ 3 48.36	− 3 38.1	22 45 28.86	. .	335 34 41.4	− 2.4
	37	Uranus, I, N.		6	6 0.15	− 0.63	− 23.30	32 8 12.85	+ 3 2.44	+ 36.2	11 5 36.22	+ 0.11	83 18 12.7	. .
	38	Uranus II, S.		5	6 0.38	− 0.63	− 23.30	32 8 12.85	+ 3 6.33	+ 36.2	11 5 36.45	− 0.12	83 18 16.6	. .
	39	δ Leonis		2	8 16.66	− 0.72	− 23.28	17 40 10.00	+ 3 11.45	+ 18.4	11 7 52.63	. .	68 50 1.0	− 1.3
	40	δ Crateris		9	13 53.16	− 0.51	− 23.33	52 56 9.68	+ 4 57.49	+ 1 16.4	11 13 29.34	. .	104 8 44.8	− 2.4
	41	τ Leonis		9	22 18.83	− 0.61	− 23.33	35 18 9.18	+ 4 44.34	+ 40.9	11 21 54.90	. .	86 29 55.6	− 1.5
	42	υ Leonis (R)		.	. . . .	. .	. .	140 54 11.38	+ 2 15.06	− 46.8	. . . .	. .	90 10 41.6	+ 1.3
	43	υ Leonis		.	. . . .	. .	. .	39 0 12.42	+ 3 16.71	+ 46.8	11 30.9	. .	90 10 37.1	− 3.1
	44	B. A. C. 3981 (R)		.	. . . .	. .	. .	189 28 15.65	+ 3 48.78	+ 9.7	. . . .	. .	41 34 7.1	− 8.2
	45	B. A. C. 3981		.	. . . .	. .	. .	350 24 12.40	+ 3 42.43	− 9.7	11 39.9	. .	41 34 6.3	− 8.2
	46	Groom. 4163, S. P.		9	49 27.38	+ 1.18	− 23.35	292 38 16.00	+ 2 52.27	− 2 17.2	23 49 5.21	. .	343 45 12.3	0.0
	47	π Virginis		9	55 16.32	− 0.63	− 23.36	31 32 13.70	+ 4 45.02	+ 35.5	11 54 52.33	− 2.84	82 43 55.4	−17.5
19, S.	48	α Pegasi		9	59 18.37	− 0.70	− 23.72	24 16 32.05	+ 2 24.47	+ 25.3	22 58 54.01	. .	75 25 43.0	− 0.9
	49	α Andromedæ		9	2 42.74	− 0.87	− 23.75	10 24 8.12	+ 2 57.99	+ 10.3	0 2 18.13	. .	61 33 37.6	− 1.8
	50	γ Pegasi		9	7 34.81	− 0.70	− 23.74	24 18 . .	. . .	. .	0 7 10.36	. .	75 28 . .	. .

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
7	30.14	54.0	52.5		ZENITH-POINT CORR.	2	− 0.3	. .	.	− 0.3
12	30.25	52.0	49.8			15	− 4.0	. .	+ 0.1	− 3.9
13	30.19	55.6	62.2		″	18	− 4.1	+ 15 57.1	.	+ 15 53.0
19	30.17	62.0	66.0	1, 28, 35. One bisection.	1 to 12 + 50.76	19	− 4.1	− 15 57.2	.	− 16 1.3
24	30.12	67.1	70.7	12, 17. Three bisections.	13 to 24 + 49.81	37	− 0.3	+ 1.9	.	+ 1.6
30	30.01	60.6	57.3	15. Four bisections.	25 to 47 + 49.84	38	− 0.3	− 2.0	.	− 2.3
47	29.98	56.8	54.2		48 to 49 + 48.78					
50	29.51	63.0	63.0							

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
April														
19, S.	1	α Cassiopeæ . . .		9	33 14.73	— 1.49	— 23.78	342 56 9.38	+ 4 20.92	— 17.0	0 32 49.46	. .	34 6 34.5	— 1.2
	2	β Ceti		9	38 4.51	— 0.38	**— 23.72**	57 26 . .	. . .	. .	0 37 40.34	. .	108 38 . .	. .
	3	Polaris . . .		5	15 54.60	—31.12	— 23.84	310 9 59.32	+ 3 52.08	— 1 5.7	1 14 59.64	. .	1 19 6.9	— 1.1
20	4	Sun I.		9	52 50.06	— 0.67	— 23.88	27 26 . .	. . .	. .	1 52 25.51	+65.26	78 21 . .	. .
	5	Sun II		9	55 0.60	— 0.67	— 23.89	26 54 . .	. . .	. .	1 54 36.04	—65.27	78 21 . .	. .
	6	δ Persei		9	34 57.81	— 1.22	**— 24.02**	351 26 7.02	+ 3 3.05	— 8.3	3 34 32.57	. .	42 35 23.0	— 1.5
24, W.	7	Moon I, N. . . .		5	8 9.12	— 0.46	— 25.24	23 30 7.28	+ 1 38.99	+ 25.2	8 7 43.42	+64.18	74 38 32.7	. .
	8	B. A. C. 2819 . .		7	20 55.99	— 1.09	— 25.24	337 44 3.48	+ 3 14.88	— 23.7	8 20 29.66	— 2.66	28 53 15.9	+ 3.3
	9	η Cancri		9	26 20.80	— 0.50	**— 25.22**	18 0 7.15	+ 2 53.32	+ 18.9	8 25 55.06	. .	69 9 40.6	— 1.9
	10	B. A. C. 2901 . .		9	31 52.08	— 0.40	— 25.24	32 42 7.20	+ 4 16.46	+ 37.4	8 31 26.44	— 1.92	83 53 22.3	—15.3
	11	γ Cancri		9	36 55.22	— 0.51	— 25.24	16 56 6.82	+ 3 51.73	+ 17.8	8 36 29.47	— 2.08	68 6 37.6	— 9.9
	12	ε Hydræ		9	40 59.20	— 0.41	**— 25.23**	31 58 6.60	+ 4 6.57	+ 36.3	8 40 33.54	. .	83 9 10.7	— 1.7
	13	σ^2 Cancri (*med.*) . .		9	47 30.57	— 0.58	— 25.24	7 48 4.50	+ 6 33.73	+ 8.1	8 47 4.75	— 2.22	59 1 7.5	— 7.0
	14	ι Ursæ Majoris . .		9	51 35.93	— 0.80	— 25.24	350 20 5.65	+ 3 28.39	— 9.8	8 51 9.89	. . .	41 29 45.4	— 2.0
	15	κ Cancri		9	1 49.11	— 0.43	**— 25.24**	27 42 5.52	+ 2 42.20	+ 30.6	9 1 23.44	. .	78 51 39.5	— 2.7
	16	B. A. C. 3146 . .		9	8 41.23	— 0.38	— 25.24	36 0 6.78	+ 4 23.63	+ 42.4	9 8 15.61	— 2.09	87 11 34.0	—17.4
	17	B. A. C. 3162^1 . .		6	11 57.87	— 0.65	— 25.24	1 32 7.95	+ 3 31.01	+ 1.6	9 11 31.98	— 2.40	52 42 1.8	— 5.6
	18	B. A. C. 3162^2 . .		5	11 58.21	— 0.65	— 25.24	1 32 7.95	+ 3 29.11	+ 1.6	9 11 32.32	— 2.40	52 41 59.9	— 5.6
	19	α Cephei, S. P. . . .		9	16 11.69	+ 0.61	— 25.24	281 0 4.52	+ 3 21.09	— 4 49.9	21 15 47.06	. .	332 4 56.9	— 4.1
	20	α Hydræ		9	22 15.10	— 0.32	**— 25.36**	46 58 6.82	+ 3 40.53	+ 1 2.6	9 21 49.54	. .	98 9 11.2	— 2.3
	21	10 Leonis Minoris . .		9	27 27.70	— 0.64	— 25.24	1 54 6.15	+ 4 20.92	+ 2.0	9 27 1.82	— 2.46	53 4 50.3	— 6.2
	22	B. A. C. 3303 . .		9	34 17.62	— 0.36	— 25.24	39 26 0.40	+ 3 35.99	+ 48.2	9 33 52.02	— 2.21	90 36 45.8	—19.1
	23	ε Leonis		7	39 37.17	— 0.52	**— 25.17**	14 30 6.40	+ 4 26.36	+ 15.2	9 39 11.41	. .	65 41 9.2	— 0.8
	24	D. M.+16°, 2042	10	5	46 24.32	— 0.47	— 25.24	22 48 6.45	+ 0 50.92	+ 24.6	9 45 58.61	— 2.35	73 55 43.2	—13.8
	25	B. VI+16°, 2047	8.7	9	47 57.68	— 0.47	— 25.24	22 48 6.45	+ 4 27.49	+ 24.7	9 47 31.97	— 2.36	73 59 19.8	—13.8
	26	32 Ursæ Maj. (R) .		.	. . . .	. .	. .	206 43 58.72	+ 3 42.12	+ 29.6	. . . .	. .	24 18 10.8	— 2.5
	27	32 Ursæ Majoris . .		.	. . . .	. .	. .	333 8 4.08	+ 4 16.20	— 29.6	10 9.5	. .	24 18 11.9	— 1.4
	28	9 Draconis (R) . .		.	. . . .	. .	. .	217 22 2.65	+ 2 48.36	+ 45.0	. . . .	. .	13 40 45.2	— 0.4
	29	9 Draconis		.	. . . .	. .	. .	322 32 5.35	+ 3 2.32	— 45.0	10 25.1	. .	13 40 43.9	— 1.7
	30	41 Leonis Min. (R) .		.	. . . .	. .	. .	164 52 6.52	+ 2 37.56	— 15.9	. . . .	. .	66 11 53.0	—12.3
	31	41 Leonis Minoris . .		.	. . . .	. .	. .	15 2 8.02	+ 3 4.09	+ 15.9	10 37.0	. .	66 11 49.2	—12.3
	32	Uranus		9	5 28.21	— 0.40	— 25.24	32 4 5.65	+ 3 50.64	+ 37.1	11 5 2.57	. .	83 14 54.6	. .
25, E.	33	Sun I, S. . . .		9	11 35.69	— 0.59	— 25.20	25 46 5.20	+ 4 0.96	+ 28.2	2 11 9.90	+65.57	76 56 55.6	. .
	34	Sun II, N. . . .		9	13 46.84	— 0.59	— 25.20	25 14 3.30	+ 4 13.41	+ 27.5	2 13 21.05	—65.58	76 25 5.4	. .
	35	Venus I, C. . . .		9	16 27.02	— 0.61	— 25.20	20 44 7.35	+ 3 42.12	+ 22.0	3 16 1.21	+ 0.37	71 54 32.7	. .
	36	α Tauri		9	29 35.66	— 0.61	**— 25.11**	22 34 2.38	+ 2 58.84	+ 24.1	4 29 9.84	. .	73 43 46.5	— 1.6
	37	ι Aurigæ		9	49 45.63	— 0.70	**— 25.19**	5 52 10.28	+ 2 40.14	+ 6.0	4 49 19.72	. .	57 1 17.6	— 2.5
	38	α Aurigæ		9	8 25.68	— 0.81	**— 25.20**	352 58 8.15	+ 2 58.23	— 7.1	5 7 59.66	. .	44 7 20.5	— 2.6
	39	β Orionis		5	9 18.58	— 0.51	**— 25.34**	47 10 13.45	+ 2 50.96	+ 1 2.2	5 8 52.86	. .	98 20 27.8	— 2.8
	40	ε Hydræ		8	40 59.37	— 0.59	**— 25.23**	31 58 7.15	+ 4 6.37	+ 36.3	8 40 33.55	. .	83 9 11.0	— 1.5
	41	Moon I, N. . . .		9	56 56.44	— 0.61	— 25.23	27 0 7.62	+ 2 45.16	+ 29.7	8 56 30.60	+62.72	78 9 43.7	. .
	42	κ Cancri		9	1 49.23	— 0.60	**— 25.21**	27 42 10.72	+ 2 38.40	+ 30.6	9 1 23.40	. .	78 51 40.9	+ 0.7
	43	α Lyncis		9	14 20.13	— 0.74	— 25.23	3 54 4.78	+ 6 8.52	+ 4.1	9 13 54.16	— 2.37	55 6 38.6	— 6.4
	44	α Hydræ		9	22 15.18	— 0.53	**— 25.24**	46 58 9.85	+ 3 37.56	+ 1 2.6	9 21 49.42	. .	98 9 11.2	— 2.3
	45	D. M.+16°, 2042	10.8	9	46 24.47	— 0.63	— 25.23	22 48 8.25	+ 0 45.95	+ 24.6	9 45 58.61	— 2.34	73 55 40.0	—13.7
	46	B. VI+16°, 2047	10	9	47 57.81	— 0.63	— 25.23	22 48 8.25	+ 4 25.40	+ 24.7	9 47 31.95	— 2.35	73 59 19.5	—13.7
26, R.	47	α Cassiopeæ . . .		9	34 15.68	— 1.08	— 25.11	342 56 9.05	+ 4 22.78	— 17.8	0 33 49.49	. .	34 6 35.2	— 1.7
	48	β Ceti		9	38 6.17	— 0.51	**— 25.14**	57 26 7.12	+ 3 56.54	+ 1 31.0	0 37 40.55	. .	108 37 55.9	— 0.4
	49	β Andromedæ . . .		9	3 34.33	— 0.80	**— 25.09**	3 50 11.18	+ 3 42.42	+ 4.0	1 3 8.41	. .	55 0 18.8	— 0.3
	50	Polaris		8	15 44.28	—17.24	— 25.12	310 10 5.68	+ 3 51.00	— 1 8.5	1 15 1.92	. .	1 19 9.4	— 0.5

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
5	29.51	65.3	65.8
6	29.49	66.8	67.5
7	30.10	53.8	55.3
31	30.14	48.9	47.4
32	30.14	48.9	45.9
34	30.23	53.3	54.5
39	30.19	57.2	58.8
40	30.16	55.2	54.8
46	30.18	51.0	50.5
48	29.93	51.3	50.2
50	29.93	52.8	50.7

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

		″
25. One bisection.	1 to 6	+ 48.78
3, 7. Three bisections.	7 to 32	+ 51.13
32. Four bisections.	33 to 39	+ 48.81
41, 50. Five bisections.	40 to 46	+ 50.89
	47 to 50	+ 50.82

50. Barometer and thermometers read at $1^h\ 11^m$.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
7	— 21 39.9	+ 14 56.7	.	— 6 43.2
32	— 0.3	. . .	.	— 0.3
33	— 3.8	— 15 55.1	.	— 15 58.9
34	— 3.8	+ 15 55.1	.	+ 15 51.3
35	— 1.9	. . .	—0.1	— 2.0
41	— 24 32.4	+ 14 50.7	.	— 9 41.7

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
April 27, R.	1	Sun I, N.		9	19 8.61	− 0.66	− 25.12	24 36 6.60	+ 3 45.39	+ 26.4	2 18 42.83	+65.65	75 46 39.6	. .
	2	Sun II, S.		9	21 19.91	− 0.66	− 25.12	25 8 6.65	+ 3 34.25	+ 27.1	2 20 54.13	−65.65	76 18 29.2	. .
	3	α Cephei, S. P.		9	16 11.70	+ 0.30	− 25.08	281 0 6.52	+ 3 15.82	− 4 45.8	21 15 46.92	. .	332 4 57.7	− 3.4
	4	1 Draconis		9	20 42.98	− 3.35	− 25.09	317 0 1.70	+ 3 35.53	− 53.5	9 20 14.54	. .	8 9 4.9	− 3.8
	5	θ Ursæ Majoris		.	. . .	. .	. .	346 38 11.50	+ 2 49.68	− 13.6	9 25.0	. .	37 47 8.8	− 1.4
	6	α Leonis (R)		.	. . .	. .	. .	153 36 12.55	+ 2 57.62	− 28.6	. . . .	. .	77 27 39.6	+ 0.7
	7	α Leonis		.	. . .	. .	. .	26 16 5.50	+ 4 40.59	+ 28.6	10 2.1	. .	77 27 35.9	− 3.0
	8	γ^1 Leonis		6	13 56.27	− 0.73	**− 25.14**	18 24 3.08	+ 3 11.37	+ 19.3	10 13 30.42	. .	69 33 54.9	− 1.3
	9	γ^2 Leonis		5	13 56.48	− 0.73	− 25.12	18 24 3.08	+ 3 13.02	+ 19.3	10 13 30.63	− 2.45	69 33 56.6	−12.6
	10	ρ Leonis		9	27 4.13	− 0.67	**− 25.14**	28 54 4.88	+ 4 28.23	+ 32.0	10 26 38.33	. .	80 5 26.3	− 1.9
	11	Moon I, N.		9	29 46.33	− 0.64	− 25.14	35 18 8.72	+ 2 26.05	+ 41.0	10 29 20.55	+61.18	86 27 37.0	. .
	12	l Leonis		9	43 31.60	− 0.68	**− 25.12**	27 40 10.40	+ 3 3.57	+ 30.4	10 43 5.77	. .	78 50 5.6	− 1.1
	13	α Ursæ Majoris (R)		.	. . .	. .	. .	203 26 6.10	+ 3 4.51	+ 25.2	. . . .	. .	27 36 45.4	− 0.3
	14	α Ursæ Majoris		3	56 55.99	− 1.31	− 25.16	336 28 7.52	+ 2 40.54	− 25.2	10 56 29.52	. .	27 36 44.1	− 1.6
	15	Uranus I, C		6	5 13.30	− 0.65	− 25.16	32 2 5.40	+ 4 28.96	+ 36.4	11 4 47.49	+ 0.16	83 13 32.0	. .
	16	Uranus II		5	5 13.62	− 0.65	− 25.16	32 2 . .	. . .	. . .	11 4 47.81	− 0.16	. . . .	. .
	17	δ Crateris		9	13 54.94	− 0.55	**− 25.15**	52 56 6.70	+ 5 0.50	+ 1 16.9	11 13 29.22	. .	104 8 45.3	− 2.3
	18	τ Leonis . s		9	22 20.63	− 0.64	**− 25.17**	35 18 7.98	+ 4 44.25	+ 41.2	11 21 54.82	. .	86 29 54.6	− 2.2
	19	λ Draconis		9	24 53.74	− 1.64	− 25.18	328 52 11.45	+ 3 5.64	− 35.0	11 24 26.92	. .	20 1 3.3	− 1.9
	20	γ Cephei, S. P.		9	34 53.74	+ 1.28	− 25.18	295 50 10.75	+ 3 47.91	− 1 59.1	23 34 29.84	. .	346 58 20.8	− 2.0
	21	β Leonis		8	43 31.07	− 0.70	**− 25.21**	23 36 7.92	+ 3 25.14	+ 25.5	11 43 5.18	. .	74 46 19.8	− 1.5
W.	22	ω Piscium		9	53 42.13	− 0.57	**− 25.48**	32 36 14.82	+ 4 2.57	+ 36.8	23 53 16.12	. .	83 47 15.4	− 4.2
	23	α Andromedæ		9	2 44.47	− 0.77	**− 25.41**	10 24 7.38	+ 2 57.32	+ 10.6	0 2 18.26	. .	61 33 36.5	− 3.1
	24	γ Pegasi		9	7 36.59	− 0.64	− 25.43	24 18 9.12	+ 3 18.75	+ 25.9	0 7 10.51	. .	75 28 15.0	− 3.4
	25	α Cassiopeæ		9	34 16.14	− 1.27	− 25.46	342 56 9.12	+ 4 22.52	− 17.5	0 33 49.41	. .	34 6 35.3	− 1.7
	26	β Ceti		9	38 6.58	− 0.38	− 25.46	57 26 1.90	+ 3 57.60	+ 1 29.4	0 37 40.74	. .	108 37 50.1	− 6.0
	27	B. A. C. 253		9	50 2.90	− 1.42	− 25.46	338 46 4.28	+ 3 16.17	− 22.1	0 49 36.02	− 0.36	29 55 19.5	− 0.2
	28	β Andromedæ		9	3 34.78	− 0.85	**− 25.47**	3 50 8.88	+ 3 41.86	+ 3.9	1 3 8.46	. .	55 0 15.8	− 3.3
	29	Polaris		8	15 46.26	−25.77	− 25.48	310 10 1.55	+ 3 51.46	− 1 7.2	1 14 55.01	. .	1 19 7.0	− 3.2
	30	Mercury II, C		9	8 46.96	− 0.62	− 25.50	26 38 4.45	+ 4 57.68	+ 28.5	2 8 20.84	− 0.17	77 49 51.8	. .
28	31	Sun I, N.		9	22 56.26	− 0.63	− 25.51	24 18 2.12	+ 2 57.18	+ 25.6	2 22 30.12	+65.75	75 27 46.1	. .
	32	Sun II, S.		9	25 7.77	− 0.63	− 25.51	24 50 8.00	+ 2 38.89	+ 26.2	2 24 41.63	−65.76	75 59 34.3	. .
	33	δ Persei		6	34 59.18	− 1.06	**− 25.57**	351 26 . .	. . .	. . .	3 34 32.58	. .	42 35 . .	. .
	34	η Tauri		9	40 55.34	− 0.72	**− 25.50**	15 6 0.70	+ 3 0.52	+ 15.2	3 40 29.07	. .	66 15 37.6	− 2.4
	35	ζ Persei		9	47 10.23	− 0.81	**− 25.53**	7 18 5.38	+ 3 29.80	+ 7.3	3 46 43.87	. .	58 28 3.7	− 1.3
	36	α Tauri		9	29 36.14	− 0.65	**− 25.57**	22 34 2.68	+ 3 0.50	+ 23.4	4 29 9.92	. .	73 43 47.8	− 0.5
	37	α Aurigæ		9	8 26.28	− 1.03	**− 25.61**	352 58 5.95	+ 3 1.04	− 6.9	5 7 59.67	. .	44 7 21.3	− 2.3
30, S.	38	ν Leonis		9	31 23.61	− 0.62	**− 25.85**	39 0 1.72	+ 3 26.26	+ 47.9	11 30 57.14	. .	90 10 36.2	− 3.5
	39	β Leonis		9	43 31.67	− 0.70	**− 25.84**	23 35 59.38	+ 3 32.26	+ 25.4	11 43 5.12	. .	74 46 18.2	− 2.8
	40	γ Ursæ Majoris		9	48 7.22	− 1.09	**− 25.85**	344 30 1.10	+ 2 54.39	− 16.1	11 47 40.28	. .	35 39 0.6	− 1.4
	41	γ Corvi		9	10 13.67	− 0.54	**− 25.80**	55 42 . .	. . .	. . .	12 9 47.28	. .	106 54 . .	. .
	42	η Virginis		9	14 21.46	− 0.62	**− 25.82**	38 50 3.22	+ 3 42.28	+ 47.0	12 13 54.99	. .	90 0 53.7	− 4.1
	43	β Corvi		9	28 41.03	− 0.51	**− 25.92**	61 33 58.00	+ 2 51.36	+ 1 47.7	12 28 14.67	. .	112 44 58.3	− 2.0
	44	Moon I, N.		9	49 5.53	− 0.57	− 25.85	48 36 1.35	+ 3 10.74	+ 1 6.5	12 48 39.11	+62.95	99 46 39.8	. .
R.	45	α Andromedæ		9	2 44.93	− 0.86	**− 25.71**	10 24 3.00	+ 3 1.71	+ 10.6	0 2 18.38	. .	61 33 36.5	− 3.1
	46	α Cassiopeæ		9	34 16.67	− 1.28	**− 25.72**	342 56 1.90	+ 4 29.16	− 17.5	0 33 49.69	. .	34 6 34.8	− 2.7
	47	β Andromedæ		9	3 35.13	− 0.93	**− 25.68**	3 50 3.68	+ 3 48.14	+ 3.9	1 3 8.48	. .	55 0 16.9	− 2.4
	48	Polaris		8	15 51.75	−21.66	− 25.72	310 10 . .	. . .	. . .	1 15 4.37	. .	1 19 . .	. .
May 1	49	Sun I, N.		9	34 21.32	− 0.76	− 25.77	23 22 1.00	+ 3 44.41	+ 24.5	2 33 54.79	+65.99	74 32 31.1	. .
	50	Sun II, S.		9	36 33.30	− 0.76	− 25.77	23 54 4.08	+ 3 26.60	+ 25.2	2 36 6.77	−65.99	75 4 17.1	. .

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
2	29.93	55.4	54.8
3	29.98	56.6	56.3
9	30.01	55.1	54.0
21	30.04	52.7	50.8
22	30.08	55.8	59.7
29	30.07	59.2	62.8
32	30.02	61.8	65.3
34	30.01	64.6	68.2
37	29.96	65.4	68.8
38	30.05	55.2	53.2
44	30.06	53.0	48.3
45	30.13	54.9	60.6
48	30.12	60.6	63.5
50	30.11	63.7	66.3

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

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11, 19, 29, 44. Three bisections. 1 to 2 + 50.82

3, 12, 15, 20, 21, 36, 37, 47. Four bisections. 3 to 21 + 51.46

22 to 37 + 50.03

38 to 44 + 50.83

45 to 50 + 49.24

21. Barometer and thermometers at $12^h\ 25^m$

48. Barometer and thermometers at $1^h\ 20^m$

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	″
1	− 3.6	+ 15 54.8	. .	+ 15 51.2
2	− 3.7	− 15 54.7	. .	− 15 58.4
11	− 31 9.8	+ 14 47.6	. .	− 16 22.2
15	− 0.3	. .	. .	− 0.3
30	− 3.0	. .	0.0	− 3.0
31	− 3.6	+ 15 54.1	. .	+ 15 50.5
32	− 3.7	− 15 54.1	. .	− 15 57.8
44	− 41 8.8	+ 15 1.4	. .	− 26 7.4
49	− 3.5	+ 15 53.0	. .	+ 15 49.5
50	− 3.5	− 15 53.0	. .	− 15 56.5

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
May 1, R.	1	Venus I, C.		6	46 29.28	− 0.80	− 25.80	18 41 56.72	+ 4 38.02	+ 19.2	3 46 2.68	+ 0.43	69 53 15.1	. .
	2	Venus II		5	46 30.10	− 0.80	− 25.80	. . . .	. . .	. .	3 46 3.50	− 0.39	. . . .	. .
	3	ε Tauri		9	22 11.24	− 0.79	**− 25.93**	19 53 59.72	+ 4 16.93	+ 20.5	4 21 44.63	. .	71 4 58.3	− 1.4
	4	α Tauri		9	29 36.51	− 0.77	**− 25.82**	22 34 1.22	+ 3 0.82	+ 23.5	4 29 9.92	. .	73 43 46.7	− 1.6
	5	ι Aurigæ		9	49 46.43	− 0.91	**− 25.82**	5 52 4.98	+ 2 47.17	+ 5.8	4 49 19.69	. .	57 1 19.2	− 1.4
	6	α Aurigæ		9	8 26.53	− 1.07	**− 25.85**	352 58 5.32	+ 3 1.75	− 6.9	5 7 59.62	. .	44 7 21.4	− 2.6
	7	β Orionis		3	9 19.17	− 0.62	**− 25.87**	47 10 4.05	+ 2 59.58	+ 1 0.9	5 8 52.71	. .	98 20 25.7	− 4.3
	8	β Tauri		5	19 17.73	− 0.86	**− 25.73**	10 18 1.75	+ 5 1.81	+ 10.3	5 18 51.02	. .	61 29 35.1	− 4.5
	9	79 Draconis, S. P.		9	51 48.89	+ 1.02	− 25.96	292 0 7.12	+ 4 21.28	− 2 19.5	21 51 23.95	. .	343 8 30.1	− 1.7
	10	α Leonis		9	2 34.18	− 0.70	**− 25.97**	26 18 1.20	+ 2 46.77	+ 28.3	10 2 7.52	. .	77 27 37.5	− 1.2
	11	γ¹ Leonis		9	13 57.12	− 0.76	**− 26.02**	18 24 3.80	+ 3 9.71	+ 19.1	10 13 30.40	. .	69 33 53.8	− 2.0
	12	9 Draconis		8	25 34.45	− 2.38	− 25.96	322 32 1.02	+ 3 4.24	− 43.8	10 25 6.11	. .	13 40 42.7	− 2.1
	13	ρ Leonis		9	27 4.89	− 0.69	**− 25.92**	28 54 3.18	+ 4 29.12	+ 31.7	10 26 38.24	. .	80 5 25.2	− 2.8
	14	B. VI+11°, 2284	9.5	8	43 46.39	− 0.70	− 25.96	27 7 59.72	+ 4 9.81	+ 29.5	10 43 19.73	− 2.47	78 19 0.2	−15.4
	15	Anonymous	10.0	8	44 7.15	− 0.70	− 25.96	27 7 59.72	+ 2 58.70	+ 29.5	10 43 40.49	2.47	78 17 49.1	−15.4
	16	α Ursæ Majoris (R)			. . . .	. .	. .	203 26 4.65	+ 3 7.83	+ 25.0	. . . .	. .	27 36 43.7	− 1.4
	17	α Ursæ Majoris		4	56 56.82	− 1.40	− 25.96	336 28 1.58	+ 2 44.74	− 25.0	10 56 29.46	. .	27 36 42.5	− 2.6
	18	δ Crateris		9	13 55.69	− 0.55	**− 25.94**	52 56 2.80	+ 5 3.78	+ 1 16.5	11 13 29.18	. .	104 8 44.3	− 3.3
	19	B. A. C. 3906			. . . .	. .	. .	317 4 2.02	+ 3 51.67	− 53.6	11 23.5	. .	8 13 21.3	+ 1.8
	20	ξ Hydræ			. . . .	. .	. .	70 0 8.15	+ 3 33.84	+ 2 38.0	11 27.2	. .	121 12 41.2	−25.9
	21	ε Corvi		9	4 32.98	− 0.51	− 25.97	60 46 3.00	+ 4 2.09	+ 1 43.5	12 4 6.50	− 3.02	111 58 9.8	−22.8
	22	B. A. C. 4123		9	10 5.28	− 1.25	− 25.97	341 10 4.38	+ 2 38.26	− 19.7	12 9 38.06	− 3.18	32 18 44.1	− 4.3
	23	γ¹ Virginis, N.		6	36 10.33	− 0.62	− 25.97	39 38 4.70	+ 3 6.42	+ 48.2	12 35 43.74	− 2.94	90 48 20.5	−17.6
	24	γ² Virginis, S.		5	36 10.50	− 0.62	− 25.97	39 38 4.70	+ 3 10.83	+ 48.2	12 35 43.91	− 2.94	90 48 24.9	−17.6
	25	32¹ Camelopardalis		8	48 46.95	− 4.85	− 25.97	314 48 2.52	+ 3 0.66	− 58.4	12 48 16.13	− 8.19	5 56 26.0	− 1.4
	26	32² Camelopardalis		8	48 54.50	− 4.86	− 25.97	314 48 2.52	+ 3 18.64	− 58.4	12 48 23.67	. .	5 56 44.0	− 1.9
	27	α² Canum Venat.		8	51 0.32	− 0.93	**− 26.02**	359 52 6.05	+ 4 19.50	− 0.1	12 50 33.42	. .	51 2 46.7	− 1.6
	28	θ Virginis		8	4 20.03	− 0.60	**− 25.90**	43 44 4.52	+ 3 24.64	+ 55.7	13 3 53.46	. .	94 54 46.1	− 2.8
	29	Polaris, S. P.		7	15 11.50	+19.17	− 25.97	307 32 8.98	+ 3 31.78	− 1 15.4	1 15 4.70	. .	358 40 46.6	− 2.0
	30	ζ Virginis		9	29 10.62	− 0.63	**− 26.05**	38 48 8.85	+ 4 27.11	+ 46.9	13 28 44.02	. .	89 59 44.1	− 3.4
	31	Moon I, N.		9	38 41.71	− 0.55	− 25.97	52 36 2.62	+ 3 26.12	+ 1 16.1	13 38 15.19	+64.49	103 47 6.0	. .
	32	η Bootis		9	49 33.61	− 0.75	**− 25.90**	19 50 7.60	+ 3 56.83	+ 21.1	13 49 6.89	. .	71 0 46.7	− 3.2
	33	d Bootis (R)			. . . .	. .	. .	166 42 9.12	+ 3 18.24	− 13.7	. . . .	. .	64 21 7.5	−11.8
	34	d Bootis			. . . .	. .	. .	13 10 7.58	+ 4 21.80	+ 13.7	14 5.0	. .	64 21 4.3	−11.8
2, W.	35	η Bootis		9	49 33.96	− 0.60	**− 26.40**	19 50 7.65	+ 3 58.30	+ 21.5	13 49 6.90	. .	71 0 48.7	− 1.0
	36	B. A. C. 4672		9	56 8.69	− 0.50	− 26.46	36 42 5.72	+ 4 2.14	+ 44.4	13 55 41.73	− 3.11	87 53 13.5	−14.4
	37	α Draconis		9	1 43.01	− 1.29	− 26.46	333 54 4.05	+ 3 45.21	− 29.1	14 1 15.26	. .	25 3 41.4	− 0.9
	38	α Bootis		9	10 46.90	− 0.60	**− 26.55**	19 2 3.08	+ 3 35.67	+ 20.6	14 10 19.84	. .	70 12 20.6	− 2.1
	39	Anonymous		7	16 26.74	− 0.40	− 26.46	53 48 7.30	+ 4 54.33	+ 1 21.4	14 15 59.88	− 3.39	105 0 44.2	−14.4
	40	B. A. C. 4769		8	18 38.23	− 0.52	− 26.46	32 28 1.70	+ 3 42.51	+ 38.0	14 18 11.25	− 3.09	83 38 43.4	−13.1
	41	B. A. C. 4773		8	18 49.09	− 0.52	− 26.46	32 28 1.70	+ 3 48.32	+ 38.0	14 18 22.11	− 3.09	83 38 49.2	−13.1
	42	ρ Bootis		9	27 14.77	− 0.69	**− 26.40**	7 56 . .	. . .	. .	14 26 47.62	. .	59 7 . .	. .
	43	Moon I, S.		9	30 54.53	− 0.38	− 26.46	56 34 4.52	+ 2 36.77	+ 1 30.3	14 30 27.69	+66.27	107 44 32.7	. .
	44	ε Bootis		9	40 20.20	− 0.66	**− 26.50**	11 16 5.30	+ 3 10.23	+ 11.9	14 39 53.07	. .	62 25 48.6	− 2.0
	45	Lal. (F.) 2545		9	52 58.59	− 0.91	− 26.47	348 42 7.28	+ 5 10.50	− 11.8	14 52 31.21	− 2.98	39 53 27.2	− 9.2
	46	α Cor. Borealis (R)			. . . .	. .	. .	168 10 9.05	+ 2 59.86	− 12.5	. . . .	. .	62 53 24.8	− 0.6
	47	α Cor. Borealis			. . . .	. .	. .	11 42 5.30	+ 4 44.28	+ 12.5	15 29.7	. .	62 53 23.3	− 2.1
	48	α Serpentis		9	38 57.47	− 0.52	**− 26.48**	32 2 4.82	+ 3 11.40	+ 37.5	15 38 30.47	. .	83 12 14.9	− 3.2
	49	ζ Ursæ Min. (R)			. . . .	. .	. .	219 12 5.50	+ 2 41.04	+ 48.9	. . . .	. .	11 50 45.8	+ 2.1
	50	ζ Ursæ Minoris		5	48 50.48	− 2.34	− 26.48	320 42 7.35	+ 3 4.65	− 48.9	15 48 21.66	. .	11 50 44.3	+ 0.6

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
1	30.09	65.4	66.7
5	30.08	67.2	68.6
7	30.08	68.8	67.8
9	30.03	63.0	61.6
20	30.03	57.6	54.3
24	30.02	56.3	51.6
33	30.02	54.4	50.8
37	30.27	46.7	44.3

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

		″
8, 40, 41. One bisection.	1 to 8	+ 49.24
4, 5, 10, 18, 32. Four bisections.	9 to 34	+ 49.80
29, 31, 43. Five bisections.	35 to 50	+ 51.54

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
1	− 1.8	. .	− 0.1	− 1.9
31	− 43 58.2	+ 15 9.2	.	− 28 49.0
43	− 46 38.1	− 15 17.8	.	− 61 55.9

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
May 2, W.	1	B. A. C. 5363		9	3 46.22	− 0.23	− 26.48	79 32 7.88	+ 4 38.81	+ 5 16.8	16 3 19.51	− 4.28	130 48 24.5	− 3.2
	2	B. A. C. 5468		9	18 5.74	− 0.30	− 26.48	69 56 4.42	+ 3 41.94	+ 2 43.3	16 17 38.96	− 3.84	121 8 50.9	− 3.1
	3	B. A. C. 5506		9	24 0.30	− 0.28	− 26.48	72 50 9.25	+ 4 44.92	+ 3 12.8	16 23 33.54	− 3.94	124 4 28.2	− 2.1
	4	β Herculis		9	25 38.79	− 0.62	**− 26.46**	17 4 . .	. . .	. .	16 25 11.69	. .	68 15 . .	. .
	5	B. A. C. 5538		9	29 7.60	− 0.28	− 26.48	73 46 6.25	+ 4 48.59	+ 3 24.4	16 28 40.84	− 3.96	125 0 40.4	− 1.4
	6	Lalande 30353		2	34 18.03	− 0.82	− 26.49	355 2 10.68	+ 3 41.93	− 5.1	16 33 50.72	− 2.71	46 12 8.7	−10.1
	7	η Herculis		9	39 21.02	− 0.77	**− 26.50**	359 40 6.12	+ 4 51.74	− 0.3	16 38 53.76	. .	50 51 18.8	− 0.6
	8	Weisse 958		9	52 35.29	− 0.46	− 26.49	42 58 4.58	+ 4 13.69	+ 56.1	16 52 8.34	− 3.10	94 9 35.6	− 4.7
	9	B. A. C. 5753		9	58 43.72	− 0.56	− 26.49	25 4 3.75	+ 2 45.76	+ 28.2	16 58 16.67	− 2.84	76 13 38.9	− 7.1
	10	B. A. C. 5757		8	59 2.13	− 0.56	− 26.49	25 4 3.75	+ 4 54.35	+ 28.2	16 58 35.08	− 2.84	76 15 47.5	− 7.1
	11	B. A. C. 5782		9	4 38.26	− 0.24	− 26.49	78 6 6.78	+ 4 12.30	+ 4 40.2	17 4 11.53	− 4.04	129 21 20.5	+ 3.1
	12	B. A. C. 5817		9	9 53.71	− 0.29	− 26.49	71 16 9.25	+ 6 9.95	+ 2 56.8	17 9 26.93	− 3.74	122 31 37.2	+ 2.2
	13	B. A. C. 5824		9	11 9.92	− 0.29	− 26.49	71 16 9.25	− 0 7.86	+ 2 55.8	17 10 43.14	− 3.73	122 25 18.4	+ 2.3
E.	14	α Andromedæ		9	2 45.34	− 0.79	**− 26.14**	10 24 7.98	+ 2 56.53	+ 10.8	0 2 18.38	. .	61 33 36.5	− 3.1
	15	γ Pegasi		9	7 37.54	− 0.72	**− 26.19**	24 18 8.42	+ 3 19.14	+ 26.6	0 7 10.65	. .	75 28 15.4	− 2.6
	16	β Andromedæ		9	3 35.56	− 0.82	**− 26.18**	3 50 9.38	+ 3 42.37	+ 4.0	1 3 8.56	. .	55 0 17.0	− 2.4
	17	Polaris		8	15 45.35	−14.02	− 26.18	310 10 8.72	+ 3 46.81	− 1 9.0	1 15 5.15	. .	1 19 7.7	− 4.1
3	18	Sun I, S.		9	42 0.72	− 0.72	− 26.19	23 18 4.55	+ 3 51.58	+ 25.1	2 41 33.81	+66.19	74 28 42.4	. .
	19	Sun II, N.		9	44 13.11	− 0.72	− 26.19	22 46 6.08	+ 4 5.55	+ 24.4	2 43 46.20	−66.20	73 56 57.2	. .
	20	Venus I, C.		9	56 38.81	− 0.75	− 26.21	18 6 4.55	+ 4 15.14	+ 18.9	3 56 11.85	+ 0.38	69 16 59.8	. .
	21	ι Aurigæ		9	49 46.60	− 0.81	**− 26.10**	5 52 12.48	+ 2 39.19	+ 5.9	4 49 19.58	. .	57 1 18.8	− 1.9
	22	α Aurigæ		9	8 26.69	− 0.91	**− 26.19**	352 58 4.90	+ 3 3.54	− 7.0	5 7 59.56	. .	44 7 22.6	− 1.7
	23	β Orionis		9	9 19.54	− 0.64	**− 26.23**	47 10 7.30	+ 2 56.07	+ 1 1.8	5 8 52.68	. .	98 20 26.4	− 3.4
	24	β Tauri		9	19 18.14	− 0.78	**− 26.23**	10 18 8.60	+ 4 56.62	+ 10.5	5 18 51.14	. .	61 29 36.9	− 2.8
	25	δ Orionis		9	26 26.46	− 0.67	**− 26.25**	39 12 9.82	+ 4 3.89	+ 46.7	5 25 59.57	. .	90 23 21.6	− 2.8
	26	ε Orionis		9	30 41.34	− 0.66	**− 26.29**	40 6 5.30	+ 3 34.78	+ 48.2	5 30 14.46	. .	91 10 49.5	− 2.1
	27	41 Leonis Minoris		9	37 29.40	− 0.72	− 26.27	15 2 8.48	+ 3 3.27	+ 15.7	10 37 2.41	− 2.46	66 11 48.7	−11.2
	28	l Leonis		9	43 32.64	− 0.67	**− 26.24**	27 40 8.65	+ 3 3.42	+ 30.5	10 43 5.70	. .	78 50 3.8	− 2.5
	29	46 Leonis Minoris		9	47 12.31	− 0.77	− 26.27	4 58 . .	. . .	. .	10 46 45.27	− 2.56	55 9 . .	. .
	30	α Ursæ Majoris (R)		.	. . .	. .	. .	203 26 7.32	+ 3 4.47	+ 25.2	. . . .	. .	27 36 44.2	− 0.6
	31	α Ursæ Majoris		7	56 56.76	− 1.09	− 26.26	336 28 9.72	+ 2 37.82	− 25.2	10 56 29.41	. .	27 36 43.5	− 1.3
	32	ψ Ursæ Majoris		9	3 31.57	− 0.85	− 26.26	353 42 11.00	+ 3 19.54	− 6.4	11 3 4.46	− 2.72	44 51 45.3	− 5.2
	33	δ Leonis		9	8 19.46	− 0.71	**− 26.24**	17 40 10.55	+ 3 8.54	+ 18.6	11 7 52.49	. .	68 49 58.9	− 1.8
	34	δ Crateris		9	13 56.02	− 0.60	− 26.24	52 58 9.10	+ 2 57.24	+ 1 17.0	11 13 29.16	. .	104 8 44.5	− 3.2
	35	τ Leonis		9	22 21.72	− 0.65	**− 26.31**	35 18 8.70	+ 4 43.24	+ 41.3	11 21 54.82	. .	86 29 54.4	− 2.1
	36	ξ Hydræ		9	27 41.73	− 0.56	− 26.25	70 0 8.70	+ 3 32.95	+ 2 39.0	11 27 14.92	− 2.89	121 12 41.8	−26.1
	37	Polaris, S. P.		5	15 19.91	+11.79	− 26.20	307 32 11.20	+ 3 29.09	− 1 15.7	1 15 5.50	. .	358 40 45.8	− 2.2
	38	α Bootis (R)		.	. . .	. .	. .	160 52 11.88	+ 2 5.81	− 20.2	. . . .	. .	70 12 23.7	+ 1.1
	39	α Bootis		.	. . .	. .	. .	19 2 8.60	+ 3 30.20	+ 20.2	14 10.3	. .	70 12 20.2	− 2.4
	40	ρ Bootis		9	27 14.57	− 0.76	**− 26.12**	7 56 9.40	+ 4 4.88	+ 8.2	14 26 47.64	. .	59 6 43.7	− 3.2
	41	33 Bootis		9	34 56.90	− 0.85	− 26.17	353 56 9.92	+ 2 49.98	− 6.2	14 34 29.88	− 2.97	45 5 14.9	− 9.2
	42	ε Bootis		9	40 19.89	− 0.74	**− 26.11**	11 16 10.85	+ 3 4.15	+ 11.7	14 39 52.99	. .	62 25 47.9	− 2.8
	43	α^2 Libræ		9	44 51.32	− 0.60	**− 26.16**	54 22 13.05	+ 3 16.59	+ 1 21.5	14 44 24.56	. .	105 33 12.3	− 2.4
	44	β Ursæ Minoris		9	51 35.62	− 1.57	− 26.16	324 12 7.48	+ 4 1.76	− 42.0	14 51 7.89	. .	15 21 48.4	− 2.3
	45	B. A. C. 4982		9	58 57.96	− 2.84	− 26.16	315 52 11.65	+ 2 43.48	− 56.5	14 58 28.96	− 6.17	7 0 19.8	− 5.8
	46	B. A. C. 4980		9	2 1.54	− 0.88	− 26.16	350 12 15.30	+ 5 14.62	− 10.0	15 1 34.50	− 2.96	41 23 41.1	− 9.2
	47	β Libræ		9	11 9.66	− 0.61	**− 26.23**	47 46 11.05	+ 3 19.77	+ 1 4.4	15 10 42.90	. .	98 56 56.4	− 2.3
	48	μ^1 Bootis		9	20 31.89	− 0.80	**− 26.19**	1 2 11.25	+ 4 4.64	+ 1.1	15 20 4.94	. .	52 12 38.2	− 1.8
	49	Moon II, S.		9	28 11.76	− 0.58	− 26.14	59 10 6.55	+ 4 42.79	+ 1 37.9	15 27 45.04	−68.03	110 22 48.4	. .
8, R.	50	α Cassiopeæ		9	34 17.94	− 1.31	− 26.84	342 56 14.22	+ 4 18.86	− 17.1	0 33 49.79	. .	34 6 37.2	− 1.3

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
1	30.28	43.8	41.3
13	30.30	42.6	39.1
14	30.35	49.7	52.0
19	30.30	55.9	57.2
26	30.22	61.0	63.8
27	30.13	56.3	54.0
37	30.10	53.5	50.5
48	30.07	51.8	49.7
50	29.99	65.6	72.0

For summary of the constants of reduction see page 3.

17, 37, 45. Three bisections.
49. Five bisections.

ZENITH-POINT CORR.
1 to 13 + 51.54
14 to 26 + 49.78
27 to 49 + 51.50
50 + 50.58

50. Barometer and thermometers read at $1^h\ 7^m$.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
18	− 3.5	− 15 52.5	.	− 15 56.0
19	− 3.4	+ 15 52.6	.	+ 15 49.2
20	− 1.7	. .	− 0.1	− 1.8
49	− 48 28.4	− 15 26.7	.	− 63 55.1

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
May 8, R.	1	Polaris		5	15 51.76	−16.94	− 26.86	310 10 12.80	+ 3 44.52	− 1 5.7	1 15 7.96	. .	1 19 12.8	− 0.4
	2	β Arietis		6	48 36.05	− 0.97	**− 26.80**	18 36 7.48	+ 3 22.66	+ 18.7	1 48 8.21	. .	69 46 10.0	+ 1.6
	3	α Arietis		2	1 0.22	− 0.98	**− 26.95**	15 56 5.85	+ 3 5.97	+ 15.8	2 0 32.36	. .	67 5 48.8	+ 3.3
9	4	Sun I, N.		7	5 12.68	− 0.96	− 26.90	21 6 8.05	+ 3 47.99	+ 21.2	3 4 44.82	+66.57	72 16 38.4	. .
	5	Sun II, S.		9	7 25.83	− 0.96	− 26.90	21 38 9.88	+ 3 27.52	+ 21.8	3 6 57.97	−66.58	72 48 20.4	. .
	6	Mercury I, C		9	41 21.04	− 0.98	− 26.92	18 4 10.98	+ 3 6.40	+ 17.9	3 40 53.14	+ 0.18	69 13 56.5	. .
	7	Venus I, N.		9	27 32.18	− 0.98	− 26.94	16 32 14.80	+ 3 11.00	+ 16.2	4 27 4.26	+ 0.39	67 42 3.2	. .
	8	Venus S.		.	. . . .	. .	. .	16 32 14.80	+ 3 22.51	+ 16.2	4 27 . .	. .	67 42 14.7	. .
	9	α Tauri		5	29 37.76	− 0.96	**− 26.89**	22 33 59.60	+ 3 5.09	+ 22.7	4 29 9.86	. .	73 43 48.6	+ 0.4
	10	α Aurigæ		9	8 27.76	− 1.16	**− 27.04**	352 58 10.45	+ 2 58.46	− 6.7	5 7 59.65	. .	44 7 23.4	− 1.7
	11	β Tauri		9	19 19.07	− 1.02	**− 26.96**	10 20 6.20	+ 3 1.73	+ 10.0	5 18 51.09	. .	61 29 39.1	− 1.0
	12	α Orionis		9	49 15.84	− 0.92	**− 26.93**	31 25 58.32	+ 4 14.22	+ 33.3	5 48 47.95	. .	82 37 7.0	+ 0.6
16, R.	13	β Andromedæ		9	3 43.62	− 0.97	**− 33.76**	3 50 19.98	+ 3 34.58	+ 3.9	1 3 8.89	. .	55 0 19.7	− 0.1
	14	Polaris		6	16 11.15	−24.55	− 33.77	310 10 9.48	+ 3 50.74	− 1 7.3	1 15 12.83	. .	1 19 14.1	− 1.0
	15	β Arietis		9	48 43.02	− 0.82	**− 33.77**	18 36 9.98	+ 3 16.36	+ 19.2	1 48 8.40	. .	69 46 6.7	− 1.4
	16	α Arietis		9	1 7.12	− 0.84	**− 33.84**	15 56 9.52	+ 2 57.27	+ 16.3	2 0 32.47	. .	67 5 44.3	− 1.1
17	17	Sun I, N.		9	36 47.27	− 0.81	− 33.89	19 8 7.12	+ 4 28.62	+ 19.7	3 36 12.57	+67.30	70 19 16.6	. .
	18	Sun II, S.		9	39 1.89	− 0.81	− 33.90	19 40 7.80	+ 4 6.63	+ 20.3	3 38 27.18	−67.31	70 50 55.9	. .
	19	α Tauri		8	29 44.65	− 0.78	**− 33.94**	22 34 1.42	+ 3 1.77	+ 23.5	4 29 9.93	. .	73 43 47.9	− 0.2
	20	Mercury I, C		9	48 9.14	− 0.85	− 33.96	14 20 6.65	+ 2 51.84	+ 14.5	4 47 34.33	+ 0.21	65 29 34.2	. .
	21	Venus I, N.		7	9 39.43	− 0.85	− 33.98	15 0 4.98	+ 4 0.38	+ 15.2	5 9 4.60	+ 0.40	66 10 41.8	. .
	22	Venus S.		.	. . . .	. .	. .	15 0 4.98	+ 4 8.93	+ 15.2	5 9 . .	. .	66 10 50.3	. .
18	23	Groom. 4163, S. P.		9	49 40.92	+ 1.23	− 35.12	292 38 2.85	+ 3 4.38	− 2 19.2	23 49 7.03	. .	343 45 9.2	+ 0.9
	24	o Virginis		9	59 50.19	− 0.56	**− 35.12**	29 26 1.20	+ 3 59.06	+ 33.1	11 59 14.52	. .	80 36 54.6	− 1.8
	25	4 Draconis		5	7 21.25	− 2.64	− 35.11	320 34 3.92	+ 4 0.91	− 48.0	12 6 43.50	. .	11 43 38.0	− 0.2
	26	γ Corvi		9	10 22.73	− 0.40	**− 35.12**	55 42 6.85	+ 3 38.07	+ 1 25.9	12 9 47.22	. .	106 53 32.0	− 2.1
	27	η Virginis		9	14 30.50	− 0.50	− 35.09	38 50 6.20	+ 3 39.37	+ 47.2	12 13 54.89	. .	90 0 54.0	− 2.9
	28	Polaris, S. P.		6	15 29.22	+19.82	− 35.07	307 32 6.10	+ 3 33.69	− 1 16.1	1 15 13.97	. .	358 40 44.9	+ 0.3
	29	ζ Virginis		9	29 19.49	− 0.50	**− 35.07**	38 48 5.45	+ 4 30.61	+ 47.4	13 28 43.92	. .	89 59 44.7	− 1.8
	30	η Bootis		9	49 42.63	− 0.63	**− 35.05**	19 50 6.05	+ 3 56.64	+ 21.3	13 49 6.95	. .	71 0 45.2	− 2.0
	31	B. A. C. 4672		9	56 17.21	− 0.51	− 35.05	36 42 8.48	+ 3 58.77	+ 43.9	13 55 41.65	− 3.14	87 53 12.3	−13.1
	32	B. A. C. 4769		8	18 46.92	− 0.54	− 35.04	32 27 59.18	+ 3 39.44	+ 37.5	14 18 11.34	− 3.15	83 38 37.3	−11.4
	33	B. A. C. 4773		8	18 57.73	− 0.54	− 35.04	32 27 59.18	+ 3 49.65	+ 37.5	14 18 22.15	− 3.15	83 38 47.5	−11.4
	34	ε Bootis (R)		.	. . . .	. .	. .	168 38 8.58	+ 2 36.01	− 11.8	. . . .	. .	62 25 48.4	+ 1.0
	35	ε Bootis		.	. . . .	. .	. .	11 16 6.88	+ 3 4.96	+ 11.8	14 39.9	. .	62 25 44.8	− 2.6
	36	Lal. (F.) 2545		3	53 7.27	− 0.98	− 35.02	348 44 3.28	+ 3 9.30	− 11.7	14 52 31.27	− 3.01	39 53 22.1	− 4.6
	37	B. A. C. 4982		6	59 8.18	− 4.18	− 35.02	315 52 0.52	+ 2 51.64	− 57.1	14 58 28.98	− 5.63	7 0 16.3	− 1.2
22, E.	38	β Andromedæ		9	3 47.70	− 0.94	**− 37.69**	3 50 . .	. . .	. .	1 3 9.01	. .	55 0 . .	. .
	39	Polaris		8	16 31.05	−35.37	− 37.76	310 10 20.95	+ 3 39.17	− 1 7.8	1 15 17.92	. .	1 19 13.5	− 2.7
	40	β Arietis		9	48 47.10	− 0.70	**− 37.84**	18 36 11.30	+ 3 12.93	+ 19.4	1 48 8.63	. .	69 46 4.8	− 3.0
	41	α Arietis		9	1 11.08	− 0.74	**− 37.77**	15 56 7.95	+ 2 57.55	+ 16.4	2 0 32.56	. .	67 5 43.1	− 2.0
23	42	Sun I, N.		9	0 50.50	− 0.71	− 37.82	17 54 6.65	+ 4 8.49	+ 18.5	4 0 11.97	+67.80	69 4 54.8	. .
	43	Sun II, S.		9	3 6.11	− 0.71	− 37.82	18 26 10.68	+ 3 40.96	+ 19.1	4 2 27.58	−67.81	69 36 31.9	. .
	44	Mercury I, C		9	31 37.86	− 0.78	− 37.85	13 16 10.00	+ 3 5.02	+ 13.4	5 30 59.23	+ 0.25	64 25 49.6	. .
	45	Venus I, N.		9	41 38.98	− 0.76	− 37.85	14 20 7.90	+ 3 54.29	+ 14.6	5 41 0.37	+ 0.41	65 30 38.0	. .
	46	Venus S.		.	. . . .	. .	. .	14 20 7.90	+ 4 6.62	+ 14.6	5 41 . .	. .	65 30 50.3	. .
	47	a^2 Geminorum		9	27 44.44	− 0.89	**− 37.89**	6 42 9.40	+ 2 40.55	+ 6.7	7 27 5.66	. .	57 51 17.9	− 1.6
	48	α Canis Minoris		9	33 47.06	− 0.52	**− 37.87**	33 18 10.25	+ 3 26.45	+ 37.1	7 33 8.65	. .	84 28 35.0	− 2.0
	49	β Geminorum		9	38 45.82	− 0.82	**− 37.90**	10 32 7.88	+ 2 48.25	+ 10.5	7 38 7.11	. .	61 41 27.8	− 2.6

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
3	29.98	70.8	76.0		ZENITH-POINT CORR.	4	− 3.1	+ 15 50.9	.	+ 15 47.8
5	29.96	73.3	81.3			5	− 3.2	− 15 51.0	.	− 15 54.2
6	29.95	75.3	81.6		″	6	− 2.2	. .	− 0.1	− 2.3
7	29.95	76.9	83.0	21. One bisection.	1 to 12 + 50.58	7	− 1.6	+ 5.8	− 0.1	+ 4.1
12	29.94	81.4	84.8	28, 39. Three bisections.	13 to 22 + 49.75	8	− 1.6	− 5.8	.	− 7.4
13	30.11	58.7	61.8	1, 6, 14, 15, 16. 44. Four bisections.	23 to 37 + 50.78	17	− 2.9	+ 15 49.6	.	+ 15 46.7
16	30.12	61.1	64.7		39 to 49 + 47.70	18	− 2.9	− 15 49.7	.	− 15 52.6
18	30.11	63.2	67.4			20	− 1.9	. .	− 0.2	− 2.1
19	30.12	65.4	68.7			21	− 1.5	+ 4.3	− 0.1	+ 2.7
23	30.37	56.0	53.7			22	− 1.5	− 4.3	.	− 5.8
31	30.37	53.7	51.4			42	− 2.7	+ 15 48.5	.	+ 15 45.8
37	30.35	52.8	49.9	7. Barometer and thermometers read at 4^h 20^m.		43	− 2.7	− 15 48.6	.	− 15 51.3
39	30.13	59.5	59.5	13. Barometer and thermometers read at 0^h 54^m.		44	− 2.0	. .	− 0.2	− 2.2
43	30.15	62.9	63.0	49. Barometer and thermometers read at 8^h 0^m.		45	− 1.4	+ 6.2	− 0.1	+ 4.7
49	30.11	67.5	69.0			46	− 1.4	− 6.2	.	− 7.6

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
May 23, E.	1	ε Hydræ		9	41 11 62	− 0.53	**− 37.91**	31 58 5.05	+ 4 7.36	+ 35.2	8 40 33.18	. .	83 9 8.8	− 2.4
	2	α Hydræ		9	22 27.32	− 0.36	**− 37.94**	46 58 6.95	+ 3 42.08	+ 1 0.3	9 21 49.03	. .	98 9 10.5	− 1.8
	3	Moon I, N.		9	25 4.51	− 0.56	− 37.93	29 22 7.85	+ 2 44.65	+ 31.7	9 24 26.02	+62.26	80 31 45.4	. .
	4	Polaris, S. P.		7	15 23.17	+33.15	− 38.04	307 32 4.95	+ 3 30.81	− 1 14.4	1 15 18.28	. .	358 40 42.6	− 1.1
	5	ζ Virginis		9	29 22.46	− 0.41	**− 38.14**	38 48 10.70	+ 4 25.53	+ 46.3	13 28 43.99	. .	89 59 43.7	− 2.4
	6	η Ursæ Majoris		9	43 35.71	− 1.24	− 38.07	348 56 7.55	+ 3 34.01	− 11.2	13 42 56.40	. .	40 5 51.6	− 2.1
	7	η Bootis		9	49 45.67	− 0.64	**− 38.10**	19 50 11.60	+ 3 49.56	+ 20.8	13 49 6.95	. .	71 0 43.2	− 3.2
	8	Anonymous		9	51 42.66	− 0.27	− 38.08	51 48 17.75	+ 5 53.91	+ 1 13.3	13 51 4.31	− 3.35	103 1 46.2	−16.1
	9	Anonymous		9	52 29.42	− 0.27	− 38.08	51 48 17.75	+ 1 37.30	+ 1 13.1	13 51 51.67	− 3.35	102 57 29.3	−16.0
	10	α Draconis		9	1 54.96	− 1.96	− 38.09	333 54 9.20	+ 3 31.57	− 28.1	14 1 14.91	. .	25 3 33.9	− 2.5
	11	α Bootis		9	10 58.40	− 0.65	**− 38.00**	19 2 8.95	+ 3 27.38	+ 19.9	14 10 19.65	. .	70 12 17.4	− 1.7
	12	Anonymous		9	16 38.09	− 0.25	− 38.11	53 48 6.98	+ 4 54.38	+ 1 18.8	14 15 59.73	− 3.49	105 0 41.4	−14.8
	13	B. A. C. 4767		8	18 50.00	− 0.48	− 38.11	32 28 6.72	+ 3 31.88	+ 36 8	14 18 11.41	− 3.16	83 38 36.6	−11.0
	14	B. A. C. 4773		8	19 0.87	− 0.48	− 38.12	32 28 6.72	+ 3 41.61	+ 36.8	14 18 22.27	− 3.16	83 38 46.3	−11.0
	15	Lal. (F) 2545		9	53 10.67	− 1.25	− 38.16	348 44 7.65	+ 3 2.55	− 11.5	14 52 31.26	− 3.00	39 53 19.9	− 3.3
	16	Lal. (F) 495, S. P.		9	56 57.98	+ 1.56	− 38.16	285 50 11.12	+ 3 42.85	− 3 20.0	2 56 21.38	− 0.92	336 56 55.2	+ 1.6
	17	Comet 1882 I, S. P.		9	29 5.23	+ 1.24	− 38.20	281 30 7.28	+ 1 30.02	− 4 36.3	3 28 28.27	. .	332 33 22.2	. .
	18	α Serpentis		9	39 9.46	− 0.49	**− 38.30**	32 2 14.98	+ 2 59.12	+ 36.3	15 38 30.76	. .	83 12 11.6	− 3.7
	19	ε Serpentis		9	45 38.18	− 0.47	**− 38.31**	34 0 14.62	+ 2 46.19	+ 39.2	15 44 59.49	. .	85 10 1.2	− 3.7
	20	ε Cor. Bor.		9	53 24.13	− 0.76	**− 38.07**	11 36 8.90	+ 4 7.66	+ 12.0	15 52 45.14	. .	62 46 49.8	− 2.1
	21	δ Ophiuchi		9	8 51.81	− 0.37	**− 38.22**	42 12 2.08	+ 4 9.57	+ 52.7	16 8 13.19	. .	93 23 25.5	− 2.2
S.	22	Polaris		6	16 24.78	−29.02	− 38.04	310 10 14.42	+ 3 47.39	− 1 7.5	1 15 17.72	. .	1 19 15.5	− 0.9
	23	β Arietis		9	48 47.34	− 0.75	**− 38.01**	18 36 9.20	+ 3 15.62	+ 19.3	1 48 8.53	. .	69 46 5.3	− 2.4
	24	α Ceti		9	56 46.31	− 0.59	**− 38.15**	35 12 . .	. . .	. .	2 56 7.62	. .	86 22 .	. .
24	25	Sun I, S.		9	4 52.59	− 0.76	− 38.14	18 14 2.98	+ 4 40.14	+ 18.7	4 4 13.69	+67.90	69 25 23.0	. .
	26	Sun II, N.		9	7 8.39	− 0.76	− 38.14	17 42 7.48	+ 4 57.95	+ 18.1	4 6 29.49	−67.90	68 53 44.7	. .
	27	α Aurigæ		9	8 38.86	− 1.14	**− 38.14**	352 58 8.12	+ 3 1.19	− 6.9	5 7 59.55	. .	44 7 23.6	− 3.7
	28	β Orionis		9	9 31.31	− 0.49	**− 38.18**	47 10 9.50	+ 2 51.56	+ 1 0.9	5 8 52.65	. .	98 20 23.2	− 3.6
	29	β Tauri		9	19 30.21	− 0.85	**− 38.26**	10 20 10.18	+ 2 56.47	+ 10.3	5 18 51.18	. .	61 29 38.1	− 2.7
	30	Mercury C		9	38 6.96	− 0.81	− 38.19	13 12 4.25	+ 4 10.80	+ 13.3	5 37 27.96	+ 0.09	64 22 49.5	. .
	31	Venus I, N.		6	46 59.85	− 0.80	− 38.19	14 16 5.62	+ 3 47.02	+ 14.4	5 46 20.86	+ 0.48	65 26 28.2	. .
	32	Venus II, S.		5	47 0.72	− 0.80	− 38.19	14 16 5.62	+ 3 57.11	+ 14.4	5 46 21.73	− 0.39	65 26 38.3	. .
	33	α Orionis		9	49 26.71	− 0.62	**− 38.14**	31 26 5.75	+ 4 1.59	+ 34.5	5 48 47.90	. .	82 37 3.0	− 2.5
25, R.	34	Moon I, N.		9	57 5.72	− 0.38	− 38.80	37 58 8.25	+ 3 54.61	+ 44.7	10 56 26.54	+61.16	89 9 8.8	. .
	35	δ Leonis		9	8 31.60	− 0.58	**− 38.80**	17 40 7 68	+ 3 8.12	+ 18.3	11 7 52.22	. .	68 49 55.3	− 3.4
	36	δ Crateris		9	14 7.99	− 0.25	**− 38.80**	52 58 7.62	+ 2 58.00	+ 1 15.9	11 13 28.94	. .	104 8 42.7	− 4.6
	37	τ Leonis		9	22 33.77	− 0.41	**− 38.83**	35 18 8.65	+ 4 41.81	+ 40.7	11 21 54.56	. .	86 29 52.4	− 2.7
	38	λ Draconis		9	25 6.56	− 1.99	− 38.80	328 52 6.55	+ 3 5.09	− 34.6	11 24 25.77	. .	20 0 58.2	− 3.0
	39	ν Leonis		9	31 36.06	− 0.37	**− 38.79**	39 0 11.98	+ 3 14.00	+ 46.5	11 30 56.89	. .	90 10 33.7	− 4.7
	40	γ Cephei, S. P.		9	35 8.71	+ 2.47	− 38.80	295 50 8.80	+ 3 46.64	− 1 57.7	23 34 32.38	. .	346 58 18.9	− 1.1
	41	γ Ursæ Maj. (R)		.	. . . .	. .	. .	195 24 12.22	+ 2 55.18	+ 15.9	. . . .	. .	35 38 57.9	0.0
	42	γ Ursæ Majoris		2	48 19.70	− 1.16	− 38.80	344 30 11.78	+ 2 38.85	− 15.9	11 47 39.74	. .	35 38 55.9	− 2.0
	43	η Virginis		9	14 33.96	− 0.38	**− 38.73**	38 50 9.98	+ 3 35.01	+ 46.5	12 13 54.78	. .	90 0 52.7	− 3.6
	44	β Corvi		9	28 53.37	− 0.18	**− 38.75**	61 32 5.68	+ 4 45.13	+ 1 46.4	12 28 14.39	. .	112 44 58.4	− 3.0
	45	γ^1 Virginis (N)		6	36 22.75	− 0.37	− 38.80	39 38 9.75	+ 2 59.55	+ 47.9	12 35 43.58	− 2.82	90 48 18.4	−16.5
	46	γ^2 Virginis (S)		5	36 22.94	− 0.37	− 38.80	39 38 9.75	+ 3 4.43	+ 47.9	12 35 43.77	− 2.82	90 48 23.3	−16.5
	47	32^1 Camelopardalis		6	48 58.09	− 6.27	− 38.80	314 48 9.88	+ 2 47.30	− 58.1	12 48 13.02	− 4.74	5 56 20.3	+ 3.6
	48	32^2 Camelopardalis		6	49 6.10	− 6.27	− 38.80	314 48 9.88	+ 3 5.93	− 58.1	12 48 21.03	. .	5 56 38.9	− 1.9
	49	α^1 Can. Venat.		9	51 11.51	− 0.82	− 38.80	359 52 8.82	+ 4 24.64	− 0.1	12 50 31.89	− 2.70	51 2 54.6	− 4.7
	50	α^2 Can. Venat.		9	51 12.80	− 0.82	**− 38.87**	359 52 8.82	+ 4 11.91	− 0.1	12 50 33.18	. .	51 2 41.8	− 1.7

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
3	30.11	68.0	70.0
4	30.12	60.2	59.3
21	30.15	56.0	54.5
22	30.23	61.2	63.2
26	30.22	67.6	69.7
29	30.20	69.0	70.0
33	30.19	70.5	70.0
34	30.07	61.4	60.8
43	30.07	58.6	56.2

For summary of the constants of reduction see page 3.

	ZENITH-POINT CORR.
	″
32, 37. One bisection.	1 to 3 + 47.70
3, 4, 22, 40, 47, 48. Three bisections.	4 to 21 + 48.84
30, 36, 43. Four bisections.	22 to 33 + 48.56
34. Five bisections.	34 to 50 + 49.67

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
3	− 26 32.6	+ 14 51.5	.	− 11 41.1
25	− 2.7	− 15 49.1	.	− 15 51.8
26	− 2.6	+ 15 49.1	.	+ 15 46.5
30	− 2.0	. .	− 0.2	− 2.2
31	− 1.4	+ 5.0	0.0	+ 3.6
32	− 1.4	− 5.1	.	− 6.5
34	− 33 15.8	+ 14 49.1	.	− 18 26.7

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
May 25, R.	1	θ Virginis . . .	.	9	4 32.60	− 0.33	**− 38.83**	43 44 7.30	+ 3 21.10	+ 55.5	13 3 53.47	. .	94 54 45.1	− 2.8
	2	Polaris, S. P.	.	7	15 30.59	+26.90	− 38.80	307 32 5.45	+ 3 29.82	− 1 15.2	1 15 18.69	. .	358 40 41.3	− 2.0
	3	Anonymous . .	.	9	51 43.39	− 0.26	− 38.79	51 48 10.38	+ 6 2.16	+ 1 14.0	13 51 4.34	− 3.34	103 1 47.7	−16.0
	4	Anonymous . .	.	9	52 29.96	− 0.26	− 38.79	51 48 10.38	+ 1 44.47	+ 1 13.9	13 51 50.91	− 3.34	102 57 29.9	−16.0
	5	Anonymous . .	.	9	16 38.62	− 0.25	− 38.79	53 50 10.32	+ 2 47.62	+ 1 19.6	14 15 59.58	− 3.48	105 0 38.7	−14.8
	6	B. A. C. 4769 .	.	8	18 50.46	− 0.43	− 38.79	32 28 9.58	+ 3 27.74	+ 37.1	14 18 11.24	− 3.16	83 38 35.6	−10.8
	7	B. A. C. 4773 .	.	8	19 1.26	− 0.43	− 38.79	32 28 9.58	+ 3 38.12	+ 37.1	14 18 22.04	− 3.16	83 38 46.0	−10.7
	8	ε Bootis (R) . .	.	.	. . . .	. .	. .	168 38 14.25	+ 2 32.41	− 11.7	. . . .	. .	62 25 46.2	+ 0.4
	9	ε Bootis . . .	.	.	. . . .	. .	. .	11 16 4.78	+ 3 6.11	+ 11.7	14 39.9	. .	62 25 43.8	− 2.0
	10	O. A. N. 3339, S. P.	8.7	9	53 11.88	+ 1.51	− 38.79	289 4 7.18	+ 3 36.40	− 2 46.5	2 52 34.60	− 0.85	340 11 18.3	+ 2.1
	11	B.VI, 67°, 244, S. P.	8.8	9	57 51.82	+ 1.26	− 38.79	286 0 9.62	+ 3 49.26	− 3 19.8	2 57 14.29	− 0.96	337 7 0.3	+ 2.0
	12	Comet 1882, I, S. P.	.	9	45 49.83	+ 0.84	− 38.79	278 14 16.42	+ 2 39.83	− 6 22.1	3 45 11.88	. .	329 16 55.3	. .
	13	B. A. C. 5358 .	.	9	3 2.01	− 0.07	− 38.79	72 0 11.10	+ 4 25.05	+ 2 59.0	16 2 23.15	− 4.32	123 13 56.4	− 6.5
	14	Radcliffe 3513 .	6.8	9	7 27.36	− 1.30	− 38.79	340 36 10.95	+ 3 4.05	− 20.6	16 6 47.27	− 3.09	31 45 15.6	− 2.5
	15	B. A. C. 5468 .	.	9	18 18.18	− 0.10	− 38.79	69 56 8.55	+ 3 41.45	+ 2 39.5	16 17 39.29	− 4.25	121 8 50.7	− 4.9
	16	B. A. C. 5508 .	.	9	24 23.73	− 0.06	− 38.78	73 14 7.42	+ 3 6.22	+ 3 12.7	16 23 44.89	− 4.39	124 26 47.5	− 4.1
	17	Anonymous . .	11.3	6	31 1.12	− 0.23	− 38.78	55 16 12.95	+ 4 8.92	+ 1 24.6	16 30 22.11	− 3.78	106 28 7.7	− 3.9
	18	B. A. C. 5593 .	.	9	37 15.77	+ 0.01	− 38.78	79 22 11.92	+ 3 19.77	+ 5 4.3	16 36 37.00	− 4.69	130 36 57.2	− 2.3
	19	Flora	.	9	45 34.64	− 0.24	− 38.78	54 28 10.58	+ 3 58.87	+ 1 22.1	16 44 55.62	. .	105 39 52.7	− 4.9
	20	κ Ophiuchi . .	.	9	52 47.53	− 0.46	**− 38.79**	29 16 7.40	+ 3 27.93	+ 33.0	16 52 8.29	. .	80 26 29.5	+ 0.8
	21	d Herculis . . .	.	9	57 57.62	− 0.74	**− 38.83**	5 6 9.70	+ 3 2.02	+ 5.3	16 57 18.10	. .	56 15 38.2	− 1.3
	22	ε Ursæ Minoris .	.	6	58 54.30	− 4.85	− 38.78	316 38 9.68	+ 2 39.63	− 55.3	16 58 10.67	. .	7 46 15.2	− 1.6
	23	a^1 Herculis . . .	.	9	9 58.49	− 0.51	**− 38.73**	24 18 9.90	+ 3 29.41	+ 26.6	17 9 19.20	. .	75 28 27.1	− 2.3
	24	Groom. 966, S. P.	.	.	. . . .	. .	. .	293 50 15.02	+ 3 20.15	− 2 11.8	5 24.0	. .	344 57 44.6	− 1.3
W.	25	β Andromedæ . .	.	.	. . . .	. .	. .	3 50 21.08	+ 3 31.25	+ 3.9	1 3.2	. .	55 0 17.4	− 2.3
	26	Polaris . . .	.	6	16 20.35	−21.92	− 39.09	310 10 16.78	+ 3 44.61	− 1 7.9	1 15 19.34	. .	1 19 14.7	− 2.1
	27	β Arietis . . .	.	9	48 48.41	− 0.73	**− 39.05**	18 36 13.52	+ 3 12.11	+ 19.4	1 48 8.58	. .	69 46 6.2	− 1.4
	28	γ Andromedæ . .	.	9	57 20.96	− 0.96	− 39.10	357 4 12.90	+ 3 43.20	− 2.9	1 56 40.90	− 1.33	48 14 14.4	− 1.2
	29	α Arietis . . .	.	9	1 12.55	− 0.76	**− 39.15**	15 56 15.08	+ 2 48.55	+ 16.4	2 0 32.69	. .	67 5 41.2	− 3.8
26	30	Sun I, N. . .	.	9	12 58.62	− 0.74	− 39.12	17 22 11.28	+ 3 38.08	+ 17.8	4 12 18.76	+67.94	68 32 28.4	. .
	31	Sun II, S. . .	.	9	15 14.50	− 0.74	− 39.12	17 54 8.22	+ 3 17.84	+ 18.4	4 14 34.64	−67.94	69 4 5.7	. .
	32	ξ Hydræ . . .	.	9	27 54.19	− 0.41	− 39.18	70 0 10.65	+ 3 35.72	+ 2 35.2	11 27 14.60	− 2.61	121 12 42.8	−27.2
	33	υ Leonis . . .	.	9	31 36.64	− 0.60	**− 39.15**	39 0 9.32	+ 3 19.31	+ 46.1	11 30 56.86	. .	90 10 35.9	− 2.5
	34	B. A. C. 3981 .	.	9	40 31.66	− 1.06	− 39.18	350 24 11.55	+ 3 36.34	− 9.6	11 39 51.42	− 2.43	41 33 59.5	− 1.9
	35	Moon I, N. . .	.	9	42 46.30	− 0.57	− 39.18	42 26 11.20	+ 4 36.43	+ 52.1	11 42 6.55	+61.49	93 38 0.9	. .
	36	π Virginis . . .	.	9	55 31.98	− 0.64	− 39.19	31 32 10.20	+ 4 45.60	+ 35.0	11 54 52.15	− 2.55	82 43 52.0	−14.7
	37	o Virginis . . .	.	9	59 54.23	− 0.66	**− 39.14**	29 26 8.60	+ 3 51.34	+ 32.2	11 59 14.38	. .	80 36 53.3	− 2.4
	38	ε Corvi	.	9	4 46.00	− 0.47	− 39.19	60 46 9.45	+ 3 58.05	+ 1 41.7	12 4 6.34	− 2.82	111 58 10.4	−23.6
	39	2^1 Can. Venat. . .	.	6	10 54.27	− 0.95	− 39.19	357 30 13.60	+ 4 31.20	− 2.4	12 10 14.13	− 2.54	48 41 3.6	− 3.9
	40	2^2 Can. Venat. . .	.	5	10 55.33	− 0.95	− 39.19	357 30 13.60	+ 4 29.57	− 2.4	12 10 15.19	− 2.54	48 41 2.0	− 3.9
	41	η Virginis . . .	.	9	14 34.63	− 0.60	**− 39.19**	38 50 15.88	+ 3 30.27	+ 46.0	12 13 54.84	. .	90 0 53.4	− 2.9
	42	β Corvi	.	9	28 54.14	− 0.46	**− 39.25**	61 32 11.22	+ 4 41.52	+ 1 45.2	12 28 14.49	. .	112 44 59.1	− 2.3
	43	γ^1 Virginis . . .	.	6	36 23.32	− 0.59	− 39.19	39 38 11.85	+ 2 58.41	+ 47.4	12 35 43.54	− 2.81	90 48 18.9	−16.4
	44	γ^2 Virginis . . .	.	5	36 23.52	− 0.59	− 39.19	39 38 11.85	+ 3 4.30	+ 47.4	12 35 43.74	− 2.81	90 48 24.8	−16.4
	45	θ^1 Virginis . . .	.	6	4 33.07	− 0.57	− 39.20	43 44 11.80	+ 3 10.60	+ 54.8	13 3 53.30	− 2.99	94 54 38.4	−16.5
	46	θ^2 Virginis . . .	.	5	4 33.22	− 0.57	**− 39.22**	43 44 11.80	+ 3 17.50	+ 54.9	13 3 53.45	. .	94 54 45.4	− 2.4
	47	Polaris, S. P. . .	.	7	15 37.96	+20.95	− 39.20	307 32 13.92	+ 3 21.17	− 1 14.2	1 15 19.71	. .	358 40 42.1	− 1.0
	48	m Virginis . . .	.	9	36 8.12	− 0.55	− 39.20	46 56 13.72	+ 3 2.77	+ 1 1.4	13 35 28.37	− 3.18	98 6 39.1	−15.8
	49	η Ursæ Maj. (R) .	.	.	. . . .	. .	. .	190 56 18.78	+ 3 59.48	+ 11.2	. . . .	. .	40 5 51.7	− 1.2
	50	η Ursæ Majoris .	.	.	. . . .	. .	. .	348 56 14.45	+ 3 25.12	− 11.2	13 42.9	. .	40 5 49.6	− 3.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
2	30.10	56.3	53.5	ZENITH-POINT CORR.	30	− 2.6	+ 15 48.6	.	+ 15 46.0
10	30.10	54.3	51.3		31	− 2.7	− 15 48.6	.	− 15 51.3
24	30.11	50.8	47.8	″	35	− 36 38.3	+ 14 52.4	.	− 21 45.9
26	30.19	56.8	59.3	10. 22, 26, 47. Three bisections. 1 to 24 + 49.67					
30	30.15	64.6	66.5	12, 16, 19. Four bisections. 25 to 31 + 49.87					
33	30.05	64.1	63.4	2, 35. Five bisections. 32 to 50 + 51.04					
43	30.05	61.9	60.7						

2. Barometer and Thermometers read at $13^h\ 20^m$.

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
May 26, W.	1	Anonymous . .	10.0	9	51 44.00	— 0.52	— 39.20	51 48 16.00	+ 5 57.21	+ 1 13.2	13 51 4.28	— 3.33	103 1 47.6	—16.0
	2	Anonymous . .	9.5	9	52 11.19	— 0.52	— 39.20	51 48 16.00	+ 2 54.45	+ 1 13.0	13 51 31.47	— 3.33	102 58 44.6	—16.0
	3	*d* Bootis (R) . .	.	.	. . . .	. .	. .	166 42 14.48	+ 3 17.10	— 13.5	. . . .	. .	64 21 3.1	— 7.0
	4	*d* Bootis . . .	.	.	. . . .	. .	. .	13 10 16.42	+ 4 8.93	+ 13.5	14 5.0	. .	64 21 0.1	— 7.0
	5	λ Bootis . . .	.	9	12 37.14	— 1.03	— 39.21	352 14 13.32	+ 1 44.93	— 7.8	14 11 56.90	— 2.90	43 22 11.6	— 2.8
	6	B. A. C. 777, S. P.	.	9	27 29.72	+ 1.12	— 39.21	291 10 13.00	+ 3 51.65	— 2 27.0	2 26 51.63	— 0.83	342 17 58.8	+ 2.8
	7	33 Bootis . . .	.	9	35 10.04	— 1.00	— 39.21	353 56 11.35	+ 2 42.64	— 6.1	14 34 29.83	— 2.94	45 5 9.1	— 3.1
	8	ε Bootis . . .	.	9	40 33.06	— 0.80	**— 39.18**	11 16 14.35	+ 2 56.48	+ 11.5	14 39 53.05	. .	62 25 43.5	— 2.1
	9	a^1 Libræ . . .	.	7	44 52.74	— 0.50	— 39.21	54 22 12.40	+ 0 36.40	+ 1 20.2	14 44 13.03	— 3.58	105 30 30.2	—12.7
	10	a^2 Libræ . . .	.	5	45 4.34	— 0.50	**— 39.17**	54 22 12.40	+ 3 17.18	+ 1 20.3	14 44 24.63	. .	105 33 11.1	— 3.7
	11	47 Cephei (H.) S. P.	.	5	51 5.16	+ 2.09	— 39.21	297 48 9.55	+ 4 14.68	— 1 48.4	2 50 28.04	— 0.13	348 56 57.0	+ 2.2
	12	Lal. (F.) 495, S. P.	.	9	57 0.68	+ 0.74	— 39.21	285 50 16.30	+ 3 37.65	— 3 19.4	2 56 22.21	— 0.99	336 56 55.8	+ 2.3
	13	δ Bootis . . .	.	6	11 27.80	— 0.86	— 39.22	5 4 13.62	+ 4 2.03	+ 5.2	15 10 47.72	— 3.02	56 14 42.0	— 4.6
	14	Weisse (2) 213 .	.	6	11 36.07	— 0.86	— 39.22	5 4 13.62	+ 3 40.81	+ 5.2	15 10 55.99	— 3.02	56 14 20.8	— 4.6
	15	β Cor. Bor. (R) .	.	.	. . . .	. .	. .	170 34 15.12	+ 2 58.30	— 9.5	. . . .	. .	60 29 17.3	— 4.9
	16	β Cor. Bor. . .	.	.	. . . .	. .	. .	9 18 15.30	+ 4 29.67	+ 9.5	15 23.0	. .	60 29 15.7	— 4.9
	17	α Cor. Bor. . .	.	9	30 24.67	— 0.79	**— 39.25**	11 42 13.72	+ 4 31.12	+ 12.0	15 29 44.66	. .	62 53 18.0	— 1.9
	18	α Serpentis . .	.	9	39 10.58	— 0.64	**— 39.26**	32 2 13.08	+ 3 1.86	+ 36.1	15 38 30.72	. .	83 12 12.2	— 2.7
	19	B. A. C. 5230 .	.	9	44 11.08	— 0.58	— 39.22	41 54 10.98	+ 2 45.91	+ 51.8	15 43 31.28	— 3.47	93 4 9.9	— 7.2
	20	Comet 1882 I, S. P.	.	9	53 0.99	+ 0.37	— 39.22	276 32 10.85	+ 2 54.72	— 7 43.3	3 52 22.14	. .	327 33 43.5	. .
28, R.	21	Polaris . . .	.	5	16 42.92	—39.95	— 41.07	310 10 14.38	+ 3 45.32	— 1 6.5	1 15 21.90	. .	1 19 14.4	— 3.0
	22	β Arietis . . .	.	9	48 50.44	— 0.75	**— 40.99**	18 36 11.98	+ 3 11.98	+ 19.0	1 48 8.60	. .	69 46 4.2	— 3.2
	23	α Arietis . . .	.	9	1 14.57	— 0.80	**— 41.06**	15 56 7.18	+ 2 57.72	+ 16.1	2 0 32.68	. .	67 5 42.2	— 2.6
	24	β Ursæ Min., S. P.	.	9	51 45.57	+ 3.06	— 41.11	293 30 10.65	+ 3 51.94	— 2 7.7	14 51 7.52	. .	344 38 16.1	— 1.1
	25	α Ceti	.	9	56 49.29	— 0.52	**— 41.11**	35 12 7.65	+ 3 12.57	+ 39.6	2 56 7.66	. .	86 22 21.0	— 2.9
	26	α Persei (R) . .	.	.	. . . .	. .	. .	190 30 15.62	+ 2 17.42	+ 10.4	. . . .	. .	40 33 37.8	— 0.8
	27	α Persei . . .	.	.	. . . .	. .	. .	349 21 5.40	+ 3 21.39	— 10.4	3 15.9	. .	40 33 37.6	— 1.0
	28	δ Persei . . .	.	9	35 15.52	— 1.36	**— 41.26**	351 26 8.88	+ 3 6.71	— 8.4	3 34 33.03	. .	42 35 28.4	— 2.1
29	29	Sun I, N . . .	.	9	25 11.41	— 0.78	— 41.15	16 52 19.40	+ 4 22.07	+ 17.0	4 24 29.48	+68.16	68 3 19.7	. .
	30	Sun II, S. . .	.	9	27 47.73	— 0.78	— 41.15	17 24 16.40	+ 4 0.65	+ 17.6	4 26 45.80	—68.16	68 34 55.8	. .
	31	α Aurigæ . . .	.	9	8 42.16	— 1.31	**— 41.24**	352 58 4.05	+ 3 8.25	— 6.8	5 7 59.69	. .	44 7 26.7	— 1.3
	32	ε Orionis . . .	.	8	30 55.96	— 0.45	**— 41.17**	40 6 0.50	+ 3 37.89	+ 47.0	5 30 14.34	. .	91 16 46.6	— 2.4
	33	α Orionis . . .	.	9	49 29.71	— 0.57	**— 41.18**	31 26 0.45	+ 4 7.97	+ 34.1	5 48 47.96	. .	82 37 3.7	— 1.5
	34	Mercury I, C. .	.	9	6 48.79	— 0.84	— 41.19	13 24 3.68	+ 3 47.03	+ 13.3	6 6 6.76	+ 0.27	64 34 25.2	— 2.4
	35	Venus I, N. .	.	9	13 46.78	— 0.82	— 41.19	14 6 3.48	+ 3 36.31	+ 14.0	6 13 4.77	+ 0.42	65 16 15.0	+ 4.8
	36	Venus S. . .	.	.	. . . .	. .	. .	14 6 3.48	+ 3 48.68	+ 14.0	. . . .	. .	65 16 27.4	— 7.6
	37	μ Geminorum . .	.	5	16 32.42	— 0.79	**— 41.14**	16 16 1.90	+ 3 3.78	+ 16.3	6 15 50.44	. .	67 25 43.2	— 0.9
	38	γ Geminorum . .	.	9	31 36.71	— 0.70	**— 41.17**	22 20 6.38	+ 3 20.01	+ 22.9	6 30 54.81	. .	73 30 10.5	— 1.6
	39	Polaris, S. P. . .	.	8	15 27.35	+36.56	— 41.53	307 32 4.12	+ 3 29.19	— 1 13.8	1 15 22.38	. .	358 40 40.7	— 1.8
	40	η Ursæ Maj. (R) .	.	.	. . . .	. .	. .	190 56 4.55	+ 4 14.28	+ 11.1	. . . .	. .	40 5 51.3	— 1.0
	41	η Ursæ Maj. . .	.	.	. . . .	. .	. .	348 55 58.28	+ 3 41.64	— 11.1	13 42.9	. .	40 5 50.0	— 2.3
	42	η Bootis . . .	.	9	49 49.04	— 0.64	**— 41.49**	19 50 6.18	+ 3 55.85	+ 20.7	13 49 6.86	. .	71 0 43.9	— 1.5
	43	α Draconis . .	.	9	1 58.43	— 2.09	— 41.54	333 54 4.02	+ 3 34.66	— 27.9	14 1 14.80	. .	25 3 32.0	— 2.8
	44	Moon I, N. . .	.	9	8 57.66	— 0.20	— 41.54	54 42 4.18	+ 3 18.82	+ 1 20.7	14 8 15.92	+65.68	105 53 4.9	. .
	45	ρ Bootis . . .	.	9	27 30.07	— 0.84	**— 41.56**	7 56 4.95	+ 4 4.17	+ 8.0	14 26 47.68	. .	59 6 38.3	— 2.9
	46	33 Bootis . . .	.	9	35 12.47	— 1.15	— 41.55	353 56 4.58	+ 2 49.20	— 6.0	14 34 29.77	— 2.90	45 5 9.0	— 2.2
	47	ε Bootis . . .	.	9	40 35.37	— 0.78	**— 41.52**	11 16 1.35	+ 3 9.04	+ 11.5	14 39 53.04	. .	62 25 43.1	— 1.9
	48	a^1 Libræ . . .	.	8	44 55.92	— 0.21	— 41.55	54 21 59.35	+ 0 51.27	+ 1 19.8	14 44 13.26	— 3.57	105 30 31.6	—12.6
	49	a^2 Libræ . . .	.	8	45 6.51	— 0.21	**— 41.62**	54 21 59.25	+ 3 32.38	+ 1 19.9	14 44 24.75	. .	105 33 12.8	— 2.0
	50	Lal. (F.) 2545 .	.	9	53 13.97	— 1.32	— 41.56	348 44 1.58	+ 3 7.21	— 11.4	14 52 31.09	— 2.94	39 53 18.6	— 1.4

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
5	30.06	58.8	57.2
20	30.05	57.7	55.8
21	29.87	64.1	64.5
25	29.91	66.8	68.0
28	29.91	67.5	68.7
30	29.92	68.6	70.3
31	29.92	69.8	70.8
38	29.92	72.6	72.3
39	29.96	64.2	60.6
46	29.97	62.6	58.3

For summary of the constants of reduction see page 3.

		ZENITH-POINT CORR.	″
2, 3, 4.	One bisection.	1 to 20	+ 51.04
21, 24, 44.	Three bisections.	21 to 38	+ 47.29
20, 22, 23, 28, 31, 34, 38.	Four bisections.	39 to 50	+ 48.41
39.	Five bisections.		

21. Barometer and thermometers read at $1^h\ 25^m$.
39. Barometer and thermometers read at $13^h\ 20^m$.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
29	— 2.5	+ 15 48.0	.	+ 15 45.5
30	— 2.6	— 15 48.0	.	— 15 50.6
34	— 2.3	. .	— 0.1	— 2.4
35	— 1.4	+ 6.2	0.0	+ 4.8
36	— 1.4	— 6.2	.	— 7.6
44	— 45 32.2	+ 15 16.4	.	— 30 15.8

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
May 29, R.	1	B. VI, 67°, 244, S. P.	.	9	57 54.63	+ 1.80	— 41.56	286 0 6.40	+ 3 48.19	— 3 16.1	2 57 14.87	— 1.08	337 6 59.7	+ 3.0
	2	ζ Ursæ Minoris	.	8	49 7.69	— 4.31	— 41.57	320 42 5.40	+ 2 54.20	— 46.9	15 48 21.81	. .	11 50 33.9	— 1.0
	3	ε Cor. Bor.	.	9	53 27.72	— 0.77	**— 41.62**	11 36 4.65	+ 4 10.99	+ 11.9	15 52 45.38	. .	62 46 48.7	— 1.8
	4	β^1 Scorpii	.	6	59 20.20	— 0.16	**— 41.53**	58 18 5.00	+ 2 56.88	+ 1 32.9	15 58 38.47	. .	109 28 56.0	— 3.4
	5	β^2 Scorpii	.	5	59 20.64	— 0.16	— 41.57	58 18 5.00	+ 2 43.78	+ 1 32.8	15 58 38.91	— 3.86	109 28 42.8	— 6.7
	6	B. A. C. 5358	.	9	3 4.74	+ 0.03	— 41.58	72 0 6.62	+ 4 32.20	+ 2 55.6	16 2 23.19	— 4.34	123 13 55.6	— 6.7
	7	Radcliffe 3513	.	9	7 30.64	— 1.60	— 41.58	340 36 2.90	+ 3 11.79	— 20.2	16 6 47.40	— 3.08	31 45 15.7	— 1.1
	8	B. A. C. 5468	.	9	18 20.80	0.00	— 41.58	69 56 1.50	+ 3 51.64	+ 2 36.4	16 17 39.22	— 4.27	121 8 50.7	— 5.0
	9	B. A. C. 5508	.	9	24 26.34	+ 0.05	— 41.58	73 14 5.90	+ 3 11.91	+ 3 8.9	16 23 44.81	— 4.42	124 26 47.9	— 4.3
	10	Anonymous	11.4	6	31 3.77	— 0.20	— 41.58	55 16 6.95	+ 4 15.25	+ 1 22.9	16 30 21.99	— 3.81	106 28 6.3	— 3.7
	11	Flora	.	9	41 15.97	— 0.20	— 41.59	54 26 13.38	+ 3 19.81	+ 1 20.4	16 40 34.18	. .	105 37 14.8	— 5.0
	12	κ Ophiuchi (R)	.	.	. . . .	. .	. .	150 38 9.05	+ 2 15.53	— 32.3	. . . .	. .	80 26 28.9	+ 0.9
	13	κ Ophiuchi	.	.	. . . .	. .	. .	29 16 3.85	+ 3 28.34	+ 32.3	16 52.1	. .	80 26 25.7	— 2.3
	14	*d* Herculis	.	9	58 0.57	— 0.89	**— 41.59**	5 6 7.68	+ 3 2.27	+ 5.2	16 57 18.09	. .	56 15 36.4	— 2.0
W.	15	Polaris	.	6	16 39.38	—35.06	— 41.96	310 10 20.58	+ 3 40.31	— 1 6.9	1 15 22.36	. .	1 19 15.2	— 2.4
	16	η Piscium	.	9	25 54.27	— 0.67	**— 41.99**	24 6 8.30	+ 2 44.64	+ 25.4	1 25 11.64	. .	75 15 39.5	— 2.7
	17	ζ Ceti	.	9	46 21.64	— 0.38	— 41.97	49 44 8.62	+ 3 16.75	+ 1 6.9	1 45 39.29	— 1.00	100 54 53.5	+ 9.9
	18	β Arietis	.	9	48 51.39	— 0.74	**— 41.92**	18 36 9.55	+ 3 13.68	+ 19.1	1 48 8.68	. .	69 46 3.5	— 3.8
	19	α Arietis	.	9	1 15.50	— 0.78	**— 41.99**	15 56 8.68	+ 2 56.09	+ 16.2	2 0 32.75	. .	67 5 42.2	— 2.5
	20	ξ^1 Ceti	.	9	7 28.58	— 0.63	**— 41.97**	30 32 9.70	+ 3 14.71	+ 33.4	2 6 45.97	. .	81 42 19.0	— 3.6
	21	β Ursæ Min., S. P.	.	9	51 47.20	+ 2.61	— 41.99	293 30 13.98	+ 3 50.19	— 2 8.5	14 51 7.82	. .	344 38 16.9	— 0.5
	22	α Persei (R)	.	.	. . . .	. .	. .	190 30 12.80	+ 2 19.41	+ 10.5	. . . .	. .	40 33 38.5	— 0.2
	23	α Persei	.	.	. . . .	. .	. .	349 24 11.20	+ 3 16.49	— 10.5	3 15.9	. .	40 33 38.4	— 0.3
30	24	Sun I, N.	.	9	29 16.94	— 0.77	— 42.03	16 44 8.40	+ 3 34.87	+ 16.9	4 28 34.14	+68.16	67 54 21.4	. .
	25	Sun II	.	9	31 33.26	— 0.77	— 42.03	17 0 . .	. . .	. .	4 30 50.46	—68.16	68 10 . .	. .
	26	α Orionis	.	9	49 30.61	— 0.58	**— 42.07**	31 26 7.18	+ 4 0.11	+ 34.1	5 48 47.97	. .	82 37 2.6	— 2.5
	27	β Aurigæ	.	9	51 37.02	— 1.20	— 42.06	353 54 6.65	+ 3 38.68	— 5.9	5 50 53.76	— 1.23	45 4 0.6	— 2.4
	28	Mercury I, N.	.	9	11 46.18	— 0.82	— 42.07	13 30 7.40	+ 4 33.45	+ 13.4	6 11 3.29	+ 0.28	64 41 15.4	. .
	29	Mercury S.	.	.	. . . .	. .	. .	13 30 7.40	+ 4 40.30	+ 13.4	6 11.1	. .	64 41 22.3	. .
	30	μ Geminorum	.	9	16 33.28	— 0.78	**— 42.01**	16 16 . .	. . .	. .	6 15 50.43	. .	67 26 . .	. .
	31	Venus I, N.	.	9	19 8.27	— 0.81	— 42.07	14 6 9.95	+ 3 36.59	+ 14.0	6 18 25.39	+ 0.42	65 16 21.7	. .
	32	Venus S.	.	.	. . . .	. .	. .	14 6 9.95	+ 3 48.62	+ 14.0	6 18 . .	. .	65 16 33.8	. .
	33	γ Geminorum	.	9	31 37.61	— 0.70	**— 42.07**	22 20 11.28	+ 3 14.65	+ 22.9	6 30 54.83	. .	73 30 10.0	— 2.1
	34	B. A. C. 2194	.	9	37 24.46	— 0.82	— 42.08	13 34 5.35	+ 4 37.17	+ 13.5	6 36 41.56	— 1.21	64 45 17.2	— 5.7
	35	α Canis Majoris	.	9	40 39.98	— 0.32	**— 42.15**	55 22 11.40	+ 3 40.34	+ 1 20.2	6 39 57.58	. .	106 33 33.1	— 0.9
E.	36	Polaris	.	5	16 43.32	—37.69	— 42.36	310 10 . .	. . .	. .	1 15 23.27	. .	1 19 . .	. .
	37	β Arietis	.	9	48 51.96	— 0.85	**— 42.36**	18 36 10.02	+ 3 13.30	+ 18.7	1 48 8.73	. .	69 46 3.2	— 4.0
	38	α Arietis	.	9	1 15.99	— 0.88	**— 42.35**	15 56 10.68	+ 2 54.63	+ 15.8	2 0 32.72	. .	67 5 42.3	— 2.4
	39	α Ceti	.	9	56 50.82	— 0.64	**— 42.48**	35 12 8.78	+ 3 13.20	+ 38.8	2 56 7.75	. .	86 22 22.0	— 1.6
31	40	Sun I, N.	.	9	33 22.26	— 0.87	— 42.49	16 34 5.30	+ 5 4.38	+ 16.3	4 32 38.90	+68.31	67 45 47.2	. .
	41	Sun II, S.	.	9	35 38.88	— 0.87	— 42.49	17 6 8.00	+ 4 34.71	+ 16.9	4 34 55.52	—68.31	68 17 20.8	. .
	42	Mercury I, S.	.	9	16 26.59	— 0.92	— 42.56	13 38 9.20	+ 4 50.71	+ 13.3	6 15 43.11	+ 0.28	64 49 34.4	. .
	43	Mercury N.	.	.	. . . .	. .	. .	13 38 9.20	+ 4 43.42	+ 13.3	6 15.7	. .	64 49 27.1	. .
	44	α^1 Geminorum	.	6	27 48.77	— 1.04	— 42.61	6 42 8.35	+ 2 45.73	+ 6.4	7 27 5.12	— 1.37	57 51 21.7	— 5.3
	45	α^2 Geminorum	.	5	27 49.21	— 1.04	**— 42.56**	6 42 8.35	+ 2 42.41	+ 6.4	7 27 5.56	. .	57 51 18.4	— 1.5
	46	α Canis Minoris	.	9	33 51.89	— 0.66	**— 42.61**	33 18 8.92	+ 3 28.02	+ 35.6	7 33 8.62	. .	84 28 33.7	— 2.9
	47	β Geminorum	.	9	38 50.67	— 0.97	**— 42.66**	10 32 13.20	+ 2 44.79	+ 10.1	7 38 7.09	. .	61 41 29.3	— 1.4
June 1, S.	48	β Corvi	.	9	28 58.70	+ 0.04	**— 44.37**	61 32 . .	. . .	. .	12 28 14.34	. .	112 45 . .	. .
	49	α^2 Can. Venat.	.	9	51 18.40	— 0.99	**— 44.39**	359 52 9.42	+ 4 10.83	— 0.1	12 50 33.04	. .	51 2 41.3	— 1.1
	50	θ Virginis	.	9	4 37.98	— 0.22	**— 44.37**	43 44 5.20	+ 3 24.23	+ 54.4	13 3 53.41	. .	94 54 45.0	— 2.5

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
14	29.98	59.3	56.0			24	— 2.5	— 15 47.9	.	+ 15 45.4
16	30.09	61.8	65.6		ZENITH-POINT CORR.	28	— 2.4	+ 3.4	0.0	+ 1.0
22	30.10	65.7	68.7		″	29	— 2.4	— 3.5	.	— 5.9
25	30.09	68.6	71.5			31	— 1.4	+ 6.0	0.0	+ 4.6
33	30.05	73.3	75.7	10. One bisection.	1 to 14 + 48.41	32	— 1.4	— 6.1	.	— 7.5
37	29.91	75.5	75.0	2, 15, 24. Three bisections.	15 to 35 + 48.07	40	— 2.4	+ 15 46.7	.	+ 15 44.3
41	29.87	78.3	81.6	11, 14, 20. Four bisections.	37 to 47 + 47.38	41	— 2.5	— 15 46.8	.	— 15 49.3
47	29.82	81.5	84.5		49 to 50 + 47.94	42	— 2.4	— 3.7	.	— 6.1
49	29.81	62.2	60.0			43	— 2.4	+ 3.6	0.0	+ 1.2

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
June														
1, S.	1	Polaris, S. P.	.	4	15 27.42	+41.58	— 44.34	307 32	. . .	. .	1 15 24.66	. .	358 41 . .	. .
	2	α Virginis	.	6	19 46.19	— 0.13	**— 44.32**	49 22	. . .	. .	13 19 1.73	. .	100 33	. .
	3	ζ Virginis	.	9	29 28.48	— 0.28	**— 44.34**	38 48 12.60	+ 4 23.83	+ 45.9	13 28 43.88	. .	89 59 43.5	— 1.9
	4	η Bootis	.	9	49 51.74	— 0.57	**— 44.28**	19 50 11.88	+ 3 49.70	+ 20.6	13 49 6.88	. .	71 0 43.4	— 1.6
R.	5	α Arietis	.	9	1 18.12	— 0.83	**— 44.48**	15 56 4.78	+ 2 59.93	+ 16.2	2 0 32.74	. .	67 5 42.1	— 2.5
	6	β Ursæ Min., S. P.	.	9	51 48.85	+ 2.51	— 44.57	293 30 7.38	+ 3 57.37	— 2 8.4	14 51 6.79	. .	344 38 17.6	— 0.6
	7	α Ceti	.	9	56 52.97	— 0.59	**— 44.64**	35 12 5.20	+ 3 13.59	+ 39.8	2 56 7.81	. .	86 22 19.8	— 3.5
	8	α Persei	.	9	16 41.74	— 1.36	— 44.58	349 24 5.62	+ 3 21.40	— 10.5	3 15 55.80	. .	40 33 37.7	— 1.3
2	9	Sun I, N.	.	9	41 35.50	— 0.82	— 44.62	16 20 7.78	+ 2 58.74	+ 16.5	4 40 50.06	+68.41	67 29 44.2	. .
	10	Sun II, S.	.	7	43 52.32	— 0.82	— 44.62	16 52 3.28	+ 2 37.59	+ 17.0	4 43 6.88	—68.41	68 1 19.1	. .
	11	α Aurigæ	.	9	8 45.76	— 1.26	— 44.63	352 58 4.22	+ 3 7.97	— 6.9	5 7 59.87	. .	44 7 26.5	— 2.1
	12	ε Orionis	.	9	30 59.51	— 0.54	**— 44.61**	40 5 58.02	+ 3 40.55	+ 47.2	5 30 14.33	. .	91 16 47.0	— 1.5
	13	α Orionis	.	9	49 33.20	— 0.64	**— 44.58**	31 26 2.80	+ 4 2.83	+ 34.3	5 48 47.91	. .	82 37 1.1	— 3.2
	14	μ Geminorum	.	9	16 36.04	— 0.82	**— 44.72**	16 16 1.12	+ 3 4.22	+ 16.4	6 15 50.56	. .	67 25 42.9	— 1.3
	15	Mercury I, C.	.	9	24 57.14	— 0.86	— 44.66	13 58 2.55	+ 4 49.62	+ 14.0	6 24 11.62	+ 0.30	65 9 27.4	. .
	16	γ Geminorum	.	9	31 40.27	— 0.74	**— 44.69**	22 20 1.98	+ 3 23.61	+ 23.0	6 30 54.86	. .	73 30 9.8	— 2.2
	17	Venus I, N.	.	9	35 11.16	— 0.85	— 44.67	14 10 4.45	+ 4 23.96	+ 14.2	6 34 25.64	+ 0.42	65 21 3.8	. .
	18	Venus S.	.	.	. . . .	. .	. .	14 10 4.45	+ 4 35.89	+ 14.2	. . . .	. .	65 21 15.7	. .
	19	α Canis Majoris	.	9	40 42.56	— 0.38	**— 44.68**	55 22 6.88	+ 3 42.77	+ 1 20.7	6 39 57.51	. .	106 33 31.5	— 2.1
	20	θ^1 Virginis	8.3	5	4 38.69	— 0.46	— 44.95	43 44 0.45	+ 3 22.47	+ 54.2	13 3 53.28	— 2.94	94 54 38.3	—16.1
	21	θ^2 Virginis	.	5	4 38.84	— 0.46	**— 45.00**	43 44 0.45	+ 3 28.13	+ 54.2	13 3 53.43	. .	94 54 44.0	— 3.5
	22	Polaris, S. P.	.	8	15 38.10	+32.08	— 44.96	307 32 6.92	+ 3 25.15	— 1 13.4	1 15 25.22	. .	358 40 39.9	— 2.1
	23	B. A. C. 4643 (R)	.	.	. . . .	. .	. .	224 22 3.85	+ 4 6.25	+ 55.5	. . . .	. .	6 39 15.6	+ 4.2
	24	B. A. C. 4643	.	.	. . . .	. .	. .	315 30 3.55	+ 3 46.26	— 55.5	13 45.8	. .	6 39 15.5	+ 4.2
	25	α Bootis	.	9	11 5.43	— 0.74	**— 44.98**	19 2 5.50	+ 3 28.90	+ 19.6	14 10 19.72	. .	70 12 15.2	— 2.4
	26	ι^1 Cassiopeæ, S. P.	.	6	20 6.63	+ 1.43	— 44.97	285 46 3.72	+ 3 2.64	— 3 17.5	2 19 23.09	. .	336 52 10.1	— 0.5
	27	ι^2 Cassiopeæ, S. P.	8.7	5	20 7.69	+ 1.43	— 44.97	285 46 3.72	+ 3 0.00	— 3 17.5	2 19 24.15	— 1.41	336 52 7.4	+ 4.1
	28	μ Bootis	.	9	27 33.46	— 0.89	**— 44.92**	7 56 3.98	+ 4 5.05	+ 8.0	14 26 47.59	. .	59 6 38.2	— 2.2
	29	ε Bootis (R)	.	.	. . . .	. .	. .	168 38 6.32	+ 2 42.57	— 11.4	. . . .	. .	62 25 43.7	— 0.5
	30	ε Bootis	.	.	. . . .	. .	. .	11 16 4.85	+ 3 4.65	+ 11.4	14 39.9	. .	62 25 42.1	— 2.1
	31	47 Cephei (H), S. P.	.	9	51 9.69	+ 3.49	— 44.98	297 48 1.32	+ 4 19.36	— 1 47.0	2 50 28.20	— 0.70	348 56 54.9	+ 3.9
	32	Lal. (F.) 495, S. P.	.	9	57 5.62	+ 1.43	— 44.98	285 50 5.85	+ 3 42.62	— 3 16.8	2 56 22.07	— 1.29	336 56 52.9	+ 3.7
	33	B. A. C. 4980	.	9	2 20.70	— 1.27	— 44.98	350 12 7.12	+ 5 13.43	— 9.7	15 1 34.45	— 2.93	41 23 32.1	— 0.6
	34	δ Bootis	4.5	8	11 33.72	— 0.94	— 44.99	5 4 3.85	+ 4 10.45	+ 5.1	15 10 47.79	— 3.01	56 14 40.6	— 2.7
	35	Weisse (2) 213	8.5	6	11 42.01	— 0.94	— 44.99	5 4 3.85	+ 3 49.10	+ 5.1	15 10 56.08	— 3.01	56 14 19.3	— 2.7
	36	μ^1 Bootis	.	6	20 51.00	— 1.02	**— 44.99**	1 2 6.02	+ 4 2.30	+ 1.1	15 20 4.99	. .	52 12 30.6	— 1.4
	37	μ^2 Bootis	.	5	20 52.33	— 1.02	— 44.99	1 2 6.02	+ 5 49.83	+ 1.1	15 20 6.32	— 3.00	52 14 18.1	— 2.0
	38	β Cor. Bor.	.	9	23 46.81	— 0.87	— 44.99	9 18 6.70	+ 4 35.86	+ 9.4	15 23 0.95	— 3.06	60 29 13.2	— 3.1
	39	ε Cor. Bor.	.	9	53 31.17	— 0.84	**— 44.99**	11 36 6.30	+ 4 8.33	+ 11.8	15 52 45.33	. .	62 46 47.6	— 2.0
	40	β^1 Scorpii	.	6	59 23.77	— 0.31	**— 44.92**	58 18 8.05	+ 2 55.84	+ 1 32.2	15 58 38.46	. .	109 28 57.3	— 2.1
	41	β^2 Scorpii	.	5	59 24.24	— 0.31	— 45.00	58 18 8.05	+ 2 42.47	+ 1 32.1	15 58 38.93	— 3.91	109 28 43.8	— 6.6
	42	B. A. C. 5363	.	9	4 5.02	— 0.05	— 45.00	79 32 5.85	+ 4 59.28	+ 5 0.7	16 3 19.97	— 4.77	130 48 27.0	— 7.2
	43	Radcliffe 3513	.	9	7 33.88	— 1.61	— 45.00	340 36 9.50	+ 3 0.48	— 20.0	16 6 47.27	— 3.08	31 45 11.2	+ 0.2
	44	B. A. C. 5508	.	9	24 30.00	— 0.14	— 45.01	73 14 3.38	+ 3 16.34	+ 3 7.5	16 23 44.85	— 4.48	124 26 48.4	— 4.6
	45	B. A. C. 5557	.	9	32 41.49	— 0.19	— 45.01	69 0 7.82	+ 4 47.22	+ 2 28.1	16 31 56.29	— 4.31	120 13 44.3	— 3.6
	46	Flora	.	9	36 53.81	— 0.35	— 45.01	54 24 5.48	+ 3 34.92	+ 1 19.7	16 36 8.45	. .	105 35 21.3	— 5.0
	47	B. A. C. 5638	.	9	44 42.48	— 0.09	— 45.01	76 36 6.82	+ 4 13.27	+ 3 55.9	16 43 57.38	— 4.66	127 50 37.2	— 2.2
	48	B. A. C. 5640	.	9	45 10.50	— 0.09	— 45.01	76 36 6.82	+ 2 30.23	+ 3 55.5	16 44 25.40	— 4.66	127 48 53.7	— 2.2
	49	B. A. C. 5718	.	9	55 4.42	— 0.17	— 45.02	70 48 7.20	+ 0 49.23	+ 2 42.5	16 54 19.23	— 4.39	121 58 0.1	— 1.1
	50	B. A. C. 5721	.	8	55 38.73	— 0.17	— 45.02	70 48 7.20	+ 7 49.91	+ 2 43.6	16 54 53.54	— 4.39	122 5 1.9	— 1.1

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
4	29.85	61.2	58.2
5	30.04	63.4	65.7
8	30.05	65.8	68.5
10	30.03	67.6	70.2
16	30.02	71.3	72.1
19	30.00	71.6	73.2
22	29.99	65.5	63.8
34	29.98	63.6	61.4

For summary of the constants of reduction see page 3.

	ZENITH-POINT CORR.	
	″	
29.	One bisection.	3 to 4 + 47.94
22.	Three bisections.	5 to 19 + 48.00
11, 15, 19, 28, 46.	Four bisections.	20 to 50 + 49.21

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
9	— 2.4	+ 15 47.4	.	+ 15 45.0
10	— 2.5	— 15 47.4	.	— 15 49.9
15	— 2.6	. . .	0.0	— 2.6
17	— 1.5	+ 6.0	.	+ 4.5
18	— 1.5	— 5.9	0.0	— 7.4

5. Barometer and thermometers read at $2^h\ 12^m$.
19. Barometer and thermometers read at $7^h\ 15^m$.
22. Barometer and thermometers read at $13^h\ 28^m$.

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
June														
2, R.	1	B. A. C. 5762		9	0 58.89	− 0.18	− 45.02	69 42 4.25	+ 4 1.63	+ 2 33.6	17 0 13.69	− 4.34	120 55 0.7	− 0.5
	2	B. A. C. 5782		9	4 56.98	− 0.07	− 45.02	78 6 6.10	+ 4 32.06	+ 4 25.8	17 4 11.89	− 4.74	129 21 25.2	+ 0.2
	3	*b* Ophiuchi		9	19 59.26	− 0.26	**− 45.05**	62 52 6.62	+ 3 32.12	+ 1 51.3	17 19 13.98	. .	114 3 51.2	− 2.6
	4	Groom. 966, S. P.		9	24 40.42	+ 2.45	− 45.02	293 50 5.60	+ 3 23.13	− 2 8.2	5 23 57.85	. .	344 57 41.7	− 2.1
	5	*a* Ophiuchi		9	30 16.46	− 0.65	**− 45.05**	26 10 6.15	+ 4 12.98	+ 28.2	17 29 30.79	. .	77 21 8.5	− 2.4
	6	*μ* Herculis		9	42 39.52	− 0.85	**− 45.06**	11 2 7.80	+ 3 52.38	+ 11.2	17 41 53.64	. .	62 12 32.6	− 2.2
	7	*γ* Draconis (R)			. . . .	. .	. .	192 32 9.78	+ 4 8.82	+ 12.8	. . . .	. .	38 29 49.8	+ 0.4
	8	*γ* Draconis			. . . .	. .	. .	347 20 9.12	+ 3 28.92	− 12.8	17 53.9	. .	38 29 46.4	− 3.0
	9	Moon II, N.		9	3 51.01	− 0.29	− 45.03	60 8 5.20	+ 3 59.34	+ 1 39.5	18 3 5.69	−71.18	111 20 5.2	. .
	10	*δ* Ursæ Minoris		8	11 29.41	−13.00	− 45.04	312 14 4.05	+ 4 1.69	− 1 2.8	18 10 31.37	. .	3 23 24.1	− 1.7
4, S.	11	*a* Arietis		4	1 21.26	− 0.73	**− 47.64**	15 56 . .	. . .	. .	2 0 32.88	. .	67 6 . .	. .
	12	ξ^1 Ceti		9	7 34.34	− 0.57	**− 47.64**	30 32 . .	. . .	. .	2 6 46.12	. .	81 42 . .	. .
	13	*a* Ceti		9	56 56.02	− 0.52	**− 47.70**	35 12 . .	. . .	. .	2 56 7.82	. .	86 22 . .	. .
	14	*δ* Persei.		9	35 22.10	− 1.15	− 47.70	351 26 . .	. . .	. .	3 34 33.25	. .	42 36 . .	. .
5	15	Sun I, S.		9	53 57.96	− 0.73	− 47.74	16 28 10.62	+ 5 22.74	+ 16.7	4 53 9.49	+68.55	67 40 11.3	. .
	16	Sun II.		5	56 15.06	− 0.73	− 47.74	16 12 . .	. . .	. .	4 55 26.59	−68.55	67 24 . .	. .
	17	*θ* Virginis		9	4 41.80	− 0.40	**− 48.04**	43 44 6.75	+ 3 21.85	+ 54.8	13 3 53.40	. .	94 54 44.6	− 2.8
	18	Polaris, S. P.		5	15 47.78	+28.19	− 48.01	307 32 3.60	+ 3 30.06	− 1 14.2	1 15 27.96	. .	358 40 40.7	− 1.1
	19	*a* Virginis		7	19 50.02	− 0.34	**− 47.97**	49 22 5.38	+ 3 24.23	+ 1 6.8	13 19 1.67	. .	100 32 57.6	− 1.4
	20	B. VI+67°, 244, S. P.		9	58 1.50	+ 1.29	− 48.09	286 0 3.58	+ 3 51.84	− 3 16.9	2 57 14.70	− 1.43	337 6 59.7	+ 4.1
	21	*β* Libræ		9	11 31.51	− 0.36	**− 48.12**	47 46 6.30	+ 3 22.92	+ 1 3.4	15 10 43.05	. .	98 56 53.8	− 3.4
	22	μ^1 Bootis		9	20 53.98	− 0.88	**− 48.13**	1 2 8.88	+ 3 57.38	+ 1.1	15 20 5.00	. .	52 12 28.6	− 2.6
	23	*a* Cor. Bor.		9	30 33.42	− 0.72	**− 48.06**	11 42 8.42	+ 4 33.08	+ 12.0	15 29 44.59	. .	62 53 14.7	− 2.9
R.	24	*γ* Ceti		9	38 1.24	− 0.66	**− 48.22**	36 4 2.72	+ 4 31.04	+ 41.2	2 37 12.35	. .	87 15 36.2	− 2.8
	25	*β* Ursæ Min., S. P.		9	51 53.59	+ 1.86	− 48.23	293 30 8.15	+ 3 55.49	− 2 8.3	14 51 7.22	. .	344 38 16.5	− 2.8
	26	*a* Ceti		9	56 56.68	− 0.66	**− 48.20**	35 12 1.60	+ 3 16.31	+ 39.8	2 56 7.78	. .	86 22 18.9	− 3.8
	27	*a* Persei (R)			. . . .	. .	. .	190 30 8.40	+ 2 24.04	+ 10.5	. . . .	. .	40 33 38.3	− 1.2
	28	*a* Persei.		3	16 45.18	− 1.26	− 48.24	349 24 0.05	+ 3 27.08	− 10.5	3 15 55.68	. .	40 33 37.8	− 1.7
	29	γ^2 Ursæ Min., S. P.		3	21 45.28	+ 1.55	− 48.25	291 8 1.10	+ 3 17.70	− 2 24.0	15 20 58.58	. .	342 15 16.0	− 0.8
	30	*ε* Eridani		9	28 11.88	− 0.56	**− 48.29**	48 40 6.58	+ 3 50.02	+ 1 4.0	3 27 23.07	. .	99 51 21.8	− 4.1
	31	*η* Tauri		9	41 18.63	− 0.85	**− 48.26**	15 6 1.90	+ 2 59.22	+ 15.2	3 40 29.53	. .	66 15 37.5	− 2.9
	32	*ε* Persei		9	50 46.91	− 1.07	− 48.26	359 10 1.40	+ 3 35.52	− 0.8	3 49 57.58	− 1.38	50 19 57.3	− 2.5
6	33	Sun I, N		9	58 5.75	− 0.84	− 48.29	15 52 9.40	+ 3 32.44	+ 15.9	4 57 16.62	+68.60	67 2 18.9	. .
	34	Sun II, S.		9	0 22.96	− 0.84	− 48.29	16 23 59.95	+ 3 15.44	+ 16.5	4 59 33.83	−68.61	67 33 53.1	. .
	35	*a* Aurigæ		5	8 49.17	− 1.18	**− 48.29**	352 58 3.85	+ 3 9.08	− 6.8	5 7 59.70	. .	44 7 27.3	− 1.8
	36	Polaris, S. P.		5	15 49.10	+25.59	− 48.37	307 32 0.82	+ 3 31.09	− 1 13.5	1 15 26.32	. .	358 40 39.6	− 2.0
	37	Anonymous	9.5	9	51 53.11	− 0.50	− 48.39	51 48 3.32	+ 6 10.96	+ 1 12.4	13 51 4.22	− 3.30	103 1 47.9	−15.8
	38	Anonymous	10.0	9	52 39.81	− 0.50	− 48.39	51 48 3.32	+ 1 50.62	+ 1 12.2	13 51 50.92	− 3.30	102 57 27.3	−15.7
	39	*d* Bootis (R)			. . . .	. .	. .	166 42 8.12	+ 3 25.90	− 13.4	. . . .	. .	64 21 0.6	− 5.1
	40	*d* Bootis			. . . .	. .	. .	13 10 1.55	+ 4 21.82	+ 13.4	14 5.0	. .	64 20 58.0	− 5.1
	41	*a* Bootis		9	11 8.83	− 0.78	**− 48.37**	19 2 2.90	+ 3 32.03	+ 19.7	14 10 19.65	. .	70 12 16.8	− 0.1
	42	ι^1 Cassiopeæ, S. P.	4.0	6	20 10.73	+ 0.98	− 48.41	285 46 2.02	+ 3 6.41	− 3 18.1	2 19 23.30	. .	336 52 11.5	+ 1.4
	43	ι^2 Cassiopeæ, S. P.	8.0	5	20 11.81	+ 0.98	− 48.41	285 46 2.02	+ 3 3.35	− 3 18.1	2 19 24.38	− 1.62	336 52 8.5	+ 4.5
	44	*ρ* Bootis		9	27 36.94	− 0.90	**− 48.42**	7 56 4.58	+ 4 4.44	+ 8.0	14 26 47.63	. .	59 6 38.2	− 1.3
	45	*ε* Bootis		9	40 42.32	− 0.86	**− 48.43**	11 16 6.98	+ 3 1.84	+ 11.4	14 39 53.04	. .	62 25 41.4	− 2.0
	46	α^1 Libræ	5.5	8	45 2.17	− 0.48	− 48.42	54 22 3.90	+ 0 48.24	+ 1 19.5	14 44 13.27	− 3.60	105 30 32.8	−12.6
	47	α^2 Libræ	2.5	8	45 13.63	− 0.48	**− 48.47**	54 22 3.90	+ 3 27.63	+ 1 19.6	14 44 24.73	. .	105 33 12.3	− 2.3
	48	B. A. C. 908, S. P.		9	54 16.24	+ 3.35	− 48.43	299 52 6.20	+ 3 48.77	− 1 38.9	2 53 31.16	− 0.78	351 0 37.3	+ 4.6
	49	B. A. C. 4982		5	59 20.58	− 5.37	− 48.43	315 52 8.10	+ 2 37.40	− 55.3	14 58 26.78	− 4.08	7 0 11.4	+ 4.0
	50	48 Cephei (H), S. P.		9	6 11.07	+ 2.22	− 48.44	296 10 9.88	+ 3 15.72	− 1 55.5	3 5 24.85	. .	347 17 51.3	− 0.1

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
3	29.96	61.4	59.1
10	29.95	60.8	58.5
16	29.87	67.8	66.7
17	29.94	61.9	58.0
20	29.96	59.2	56.0
23	29.96	58.8	55.5
24	30.03	64.9	67.3
32	30.03	67.3	69.2
34	30.02	69.1	71.6
36	29.99	64.7	63.2

For summary of the constants of reduction see page 3.

18, 36, 37, 49, 50. Three bisections.
10, 25, 32, 44. Four bisections.
9. Five bisections.

ZENITH-POINT CORR.

″

1 to 10 + 49.21
15 to 16 + 47.88
17 to 23 + 50.17
24 to 35 + 48.02
36 to 50 + 48.58

36. Barometer and thermometers read at $13^h\ 26^m$.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
9	− 50 35.0	+ 15 57.6	.	− 34 37.4
15	− 2.5	− 15 46.2	.	− 15 48.7
33	− 2.4	+ 15 47.0	.	+ 15 44.6
34	− 2.5	− 15 47.1	.	− 15 49.6

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
June 6, R.	1	δ Bootis . . .	3.0	8	11 37.25	− 0.94	− 48.44	5 4 4.55	+ 4 9.98	+ 5.1	15 10 47.87	− 3.01	56 14 40.8	− 1.9
	2	Weisse (2) 213 .	8.0	7	11 45.43	− 0.94	− 48.44	5 4 4.55	+ 3 49.11	+ 5.1	15 10 56.05	− 3.01	56 14 20.0	− 1.9
	3	β Cor. Bor. . .	.	9	23 50.24	− 0.88	− 48.45	9 18 4.45	+ 4 38.48	+ 9.5	15 23 0.91	− 3.07	60 29 13.6	− 2.4
	4	B. A. C. 5230 .	.	9	44 20.39	− 0.58	− 48.46	41 54 5.40	+ 2 52.38	+ 51.5	15 43 31.35	− 3.54	93 4 10.5	− 6.2
	5	ε Cor. Bor. . .	.	9	53 34.66	− 0.86	**− 48.45**	11 36 6.05	+ 4 8.67	+ 11.8	15 52 45.33	. .	62 46 47.7	− 1.0
	6	β^1 Scorpii . . .	2.0	6	59 27.48	− 0.45	**− 48.46**	58 18 7.80	+ 2 55.93	+ 1 32.7	15 58 38.56	. .	109 28 57.6	− 1.8
	7	β^2 Scorpii . . .	6.7	5	59 27.90	− 0.45	− 48.47	58 18 7.80	+ 2 43.51	+ 1 32.7	15 58 38.98	− 3.95	109 28 45.2	− 6.7
	8	B. A. C. 5363 .	.	9	4 8.82	− 0.26	− 48.47	79 32 5.28	+ 4 58.16	+ 5 2.8	16 3 20.09	− 4.81	130 48 27.4	− 7.8
	9	B. A. C. 5437 .	.	9	12 57.37	− 0.57	− 48.48	43 14 . .	. . .	. . .	16 12 8.32	− 3.62	94 24 . .	. .
	10	Gould Z. C. 1206	9.5	8	18 33.44	− 0.26	− 48.48	79 10 9.75	+ 3 1.08	+ 4 52.1	16 17 44.70	− 4.82	130 24 24.1	− 6.0
	11	Lal. 30024 (*med.*)	.	8	24 33.82	− 0.77	− 48.49	20 10 3.48	+ 3 28.57	+ 21.1	16 23 44.56	− 3.28	71 20 14.3	− 1.7
	12	Anonymous . .	.	9	31 11.18	− 0.48	+ 48.49	55 16 7.78	+ 4 15.05	+ 1 22.8	16 30 22.21	3.92	106 28 6.8	− 3.6
	13	Anonymous . .	9.6	9	37 38.70	− 0.50	− 48.49	52 46 5.70	+ 1 12.90	+ 1 15.5	16 36 49.71	− 3.86	103 54 55.3	− 2.9
	14	B. A. C. 5675 .	8.5	9	48 24.93	− 0.21	− 48.50	78 4 6.10	+ 3 50.54	+ 4 26.4	16 47 36.22	− 4.80	129 18 44.2	− 2.3
	15	B. A. C. 5718 .	5.5	9	55 8.22	− 0.35	− 48.51	70 48 6.75	+ 0 49.42	+ 2 43.5	16 54 19.36	− 4.45	121 58 0.9	− 1.5
	16	B. A. C. 5721 .	7.3	9	55 42.58	− 0.35	− 48.51	70 48 6.75	+ 7 49.17	+ 2 44.6	16 54 53.72	− 4.46	122 5 1.7	− 1.4
	17	B. A. C. 5781 .	2.5	9	4 29.60	− 0.48	− 48.51	54 24 3.95	+ 2 51.90	+ 1 20.3	17 3 40.61	− 3.91	105 34 37.3	− 0.5
	18	B. A. C. 5817 .	5.7	9	10 16.46	− 0.34	− 48.51	71 16 10.32	+ 6 19.92	+ 2 48.8	17 9 27.61	− 4.48	122 31 40.2	+ 0.2
	19	B. A. C. 5824 .	6.8	9	11 32.74	− 0.34	− 48.52	71 16 10.32	+ 0 3.50	+ 2 47.9	17 10 43.88	− 4.47	122 25 22.9	+ 0.4
	20	Weisse (2) 516 .	.	9	20 7.03	− 0.74	− 48.52	22 23 58.62	+ 4 35.02	+ 23.8	17 19 17.77	− 3.34	73 35 18.6	+ 0.4
	21	D.M.−−0°, 3298	7.5	9	24 52.69	− 0.60	− 48.52	39 46 4.65	+ 3 21.41	+ 47.9	17 24 3.57	− 3.59	90 56 35.2	+ 0.9
	22	B. A. C. 5910 .	5.0	6	25 12.05	− 0.60	− 48.52	39 46 4.65	+ 4 31.86	+ 48.0	17 24 22.93	− 3.59	90 57 45.7	+ 1.0
	23	B. A. C. 5974 .	5.5	9	35 43.87	− 0.30	− 48.53	75 38 5.48	+ 4 50.98	+ 3 42.0	17 34 55.04	− 4.66	126 52 59.7	+ 3.4
	24	Fortuna . . .	.	9	44 0.03	− 0.44	− 48.54	60 16 5.58	+ 2 54.69	+ 1 40.6	17 43 11.05	. .	111 27 2.1	− 4.7
	25	γ Draconis (R) .	.	.	. . . .	. .	. .	192 32 10.75	+ 4 8.70	+ 12.9	. . . .	. .	38 29 48.9	+ 0.8
	26	γ Draconis. . .	.	.	. . . .	. .	. .	347 20 11.90	+ 3 24.81	− 12.9	17 53.9	. .	38 29 45.0	− 3.1
	27	γ^2 Sagittarii . .	.	8	59 6.86	− 0.36	**− 48.52**	69 12 3.50	+ 4 22.51	+ 2 31.0	17 58 17.96	. .	120 25 18.2	− 2.5
	28	μ Sagittarii . .	.	9	7 35.41	− 0.44	**− 48.57**	59 54 . .	. . .	. . .	18 6 46.42	. .	111 5 . .	. .
	29	δ Ursæ Minoris .	.	8	11 29.85	−10.61	− 48.55	312 14 2.55	+ 4 2.54	− 1 3.2	18 10 30.69	. .	3 23 23.1	− 1.5
	30	ι Aquilæ . . .	.	9	29 39.90	− 0.54	**− 48.57**	47 8 4.85	+ 3 54.57	+ 1 2.2	18 28 50.80	. .	98 19 22.8	− 2.7
7, W.	31	α^1 Can. Venat. .	.	3	51 21.97	− 0.91	− 49.34	359 52 8.08	+ 4 24.39	− 0.1	12 50 31.72	− 2.51	51 2 53.6	− 2.8
	32	α^2 Can. Venat. .	.	5	51 23.27	− 0.91	**− 49.43**	359 52 8.08	+ 4 11.33	− 0.1	12 50 33.02	. .	51 2 40.5	− 1.1
	33	θ^1 Virginis . . .	.	5	4 42.98	− 0.45	− 40.34	43 44 8.80	+ 3 14.30	+ 53.0	13 3 53.19	− 2.91	94 54 37.3	−15.9
	34	θ^2 Virginis . . .	.	5	4 43.08	− 0.45	**− 49.28**	43 44 8.80	+ 3 21.85	+ 53.0	13 3 53.29	. .	94 54 44.8	− 2.5
	35	Polaris, S. P. . .	.	5	15 51 78	+27.08	− 49.34	307 32 8.35	+ 3 22.85	− 1 11.9	1 15 29.52	. .	358 40 40.5	− 1.0
	36	η Ursæ Majoris .	.	9	43 46.63	− 1.13	− 49.34	348 56 9.08	+ 3 28.93	− 10.8	13 42 56.16	. .	40 5 48.4	− 2.1
	37	η Bootis . . .	.	9	49 56.78	− 0.66	**− 49.27**	19 50 10.70	+ 3 49.82	+ 20.2	13 49 6.78	. .	71 0 41.9	− 2.2
	38	50 Cassiopeæ . .	.	9	54 12.58	+ 1.64	− 49.34	290 44 5.72	+ 2 49.60	− 2 25.5	1 53 24.88	. .	341 50 51.0	− 1.6
	39	α Draconis . . .	.	9	2 5.68	− 1.71	− 49.34	333 54 6.25	+ 3 30.63	− 27.2	14 1 14.63	. .	25 3 30.9	− 1.9
	40	α Bootis . . .	.	9	11 9.72	− 0.67	**− 49.37**	19 2 11.10	− 3 22.44	+ 19.3	14 10 19.71	. .	70 12 14.0	− 2.8
	41	λ Virginis . . .	.	9	13 36.69	− 0.39	− 49.34	51 38 . .	. . .	. . .	14 12 46.96	− 3.40	102 50 . .	. .
	42	β Cor. Bor. (R) .	.	.	. . . .	. .	. .	170 34 8.95	+ 3 5.03	− 9.3	. . . .	. .	60 29 16.5	− 2.1
	43	β Cor. Bor. . .	.	.	. . . .	. .	. .	9 18 11.40	+ 4 31.25	+ 9.3	15 23.0	. .	60 29 13.1	− 2.1
	44	γ Camelop., S. P. .	.	9	38 45.27	+ 1.54	− 49.34	289 50 9.10	+ 3 57.55	− 2 34.4	3 37 57.47	− 1.28	340 57 53.4	+ 4.1
E.	45	ζ Persei . . .	.	9	47 34.71	− 1.05	**− 49.32**	7 18 8.70	+ 3 28.42	+ 7.1	3 46 44.32	. .	58 28 5.4	− 1.9
	46	γ^1 Eridani . . .	.	9	53 22.09	− 0.58	**− 49.36**	52 40 10.02	+ 2 53.37	+ 1 11.8	3 52 32.17	. .	103 50 36.4	− 3.0
8	47	Sun I, N. . .	.	9	6 22.19	− 0.93	49.34	15 40 13.45	+ 4 11.04	+ 15.4	5 5 31.92	+68.72	66 51 1.1	. .
	48	Sun II, S. . .		9	8 39.64	− 0.93	− 49.34	16 12 8.78	+ 3 46.71	+ 15.9	5 7 49.37	−68.73	67 22 32.6	. .
	49	γ Geminorum . .	.	9	31 45.02	− 0.86	**− 49.30**	22 20 7.70	+ 3 17.29	+ 22.5	6 30 54.81	. .	73 30 8.7	− 3.2
	50	Mercury I, C .	.	9	43 13.16	− 0.94	− 49.35	15 20 5.28	+ 3 22.25	+ 15.0	6 42 22.87	+ 0.34	66 30 3.7	. .

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
3	30.00	61.3	58.7		ZENITH-POINT CORR.	47	− 2.4	+ 15 45.7	.	+ 15 43.3
21	30.00	59.7	56.4		″	48	− 2.4	− 15 45.8	.	− 15 48.2
30	30.00	58.4	55.2			50	− 3.3	. . .	+ 0.1	− 3.2
32	29.94	72.1	76.0	8, 31, 32. One bisection.	1 to 30 + 48.58					
40	29.94	72.1	70.7	35. Three bisections.	31 to 44 + 48.28					
44	29.92	67.6	64.9	12, 30. Four bisections.	45 to 50 + 45.96					
46	29.97	77.5	80.8	29. Five bisections.						
48	29.96	79.7	82.6							

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
June					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
8, E.	1	Venus I, S.		9	7 4.41	− 0.95	− 49.35	14 40 8.15	+ 3 11.78	+ 14.3	7 6 14.11	+ 0.43	65 49 55.4	. .
	2	Venus N.		.	. . . .	. .	. .	14 40 8.15	+ 2 58.96	+ 14.3	7 6.2	. .	65 49 42.6	. .
	3	α Canis Minoris		9	33 58.74	− 0.75	**− 49.40**	33 18 3.78	+ 3 32.05	+ 35.8	7 33 8.64	. .	84 28 32.8	− 3.3
	4	α^1 Can. Venat.		6	51 22.33	− 1.09	− 49.59	359 52 5.55	+ 4 26.40	− 0.1	12 50 31.65	− 2.49	51 2 53.1	− 2.6
	5	α^2 Can. Venat.		5	51 23.63	− 1.09	**− 49.63**	359 52 5.55	+ 4 13.36	− 0.1	12 50 32.95	. .	51 2 40.0	− 1.5
	6	θ^1 Virginis		6	4 43.43	− 0.60	− 49.60	43 44 5.88	+ 3 16.42	+ 53.1	13 3 53.23	− 2.90	94 54 36.6	−15.8
	7	θ^2 Virginis		5	4 43.50	− 0.60	**− 49.56**	43 44 5.88	+ 3 24.30	+ 53.1	13 3 53.30	. .	94 54 44.5	− 2.7
	8	Polaris, S. P.		7	15 50.96	+28.95	− 49.61	307 32 5.68	+ 3 24.84	− 1 11.9	1 15 30.30	. .	358 40 39.8	− 1.6
	9	β Bootis		9	58 23.81	− 1.13	**− 49.68**	357 58 6.02	+ 4 9.86	− 1.9	14 57 33.00	. .	49 8 35.2	− 1.7
S.	10	γ^2 Ceti		8	38 2.79	− 0.66	**− 49.70**	36 4 4.02	+ 4 31.04	+ 39.8	2 37 12.44	. .	87 15 36.1	− 2.4
	11	α Ceti		9	56 58.22	− 0.67	**− 49.67**	35 12 7.95	+ 3 11.52	+ 38.5	2 56 7.86	. .	86 22 19.2	− 3.0
	12	α Persei		9	16 46.82	− 1.36	**− 49.69**	349 24 1.68	+ 3 24.41	− 10.1	3 15 55.77	. .	40 33 37.2	− 2.6
9	13	Sun I, S.		9	10 30.80	− 0.87	− 49.69	16 8 4.38	+ 2 48.31	+ 15.7	5 9 40.24	+68.71	67 17 29.6	. .
13, S.	14	θ Virginis		9	4 47.43	− 0.28	**− 53.85**	43 44 . .	. . .	. .	13 3 53.32	. .	94 55 . .	. .
	15	Polaris, S. P.		4	16 4.32	+24.53	− 53.84	307 32 7.80	+ 3 23.55	− 1 13.1	1 15 35.01	. .	358 40 39.5	− 1.3
	16	α Virginis		9	19 55.78	− 0.24	**− 53.88**	49 22 . .	. . .	. .	13 19 1.70	. .	100 33 . .	. .
	17	η Ursæ Majoris		9	43 50.48	− 0.88	− 53.85	348 56 9.90	+ 3 27.55	− 11.0	13 42 55.75	. .	40 5 47.6	− 1.8
	18	η Bootis		9	50 1.06	− 0.46	**− 53.80**	19 50 9.18	+ 3 50.33	+ 20.5	13 49 6.74	. .	71 0 41.2	− 2.1
	19	β Bootis		9	58 27.59	− 0.71	**− 53.92**	357 58 9.88	+ 4 4.32	− 1.9	14 57 32.99	. .	49 8 33.5	− 2.2
	20	β Libræ		9	11 37.17	− 0.25	**− 53.89**	47 46 9.10	+ 3 20.80	+ 1 2.8	15 10 43.02	. .	98 56 53.9	− 2.9
	21	ε Cor. Bor. (R)		.	. . . .	. .	. .	168 16 12.72	+ 3 32.36	− 11.8	. . . .	. .	62 46 47.9	+ 0.8
	22	ε Cor. Bor.		.	. . . .	. .	. .	11 36 10.75	+ 4 1.33	+ 11.8	15 52.8	. .	62 46 45.1	− 2.0
	23	δ Ophiuchi		9	9 7.61	− 0.29	**− 53.96**	42 12 11.95	+ 3 58.44	+ 51.9	16 8 13.39	. .	93 23 23.5	− 2.2
	24	B. A. C. 5471		9	19 9.11	− 0.10	− 53.94	70 12 15.45	+ 4 35.99	+ 2 38.0	16 18 15.07	− 4.42	121 25 50.6	− 5.8
	25	B. A. C. 5557		9	32 50.63	− 0.11	− 53.94	69 0 15.12	+ 4 39.71	+ 2 28.5	16 31 56.58	− 4.40	120 13 44.5	− 4.2
	26	B. A. C. 5589		9	37 0.46	− 0.10	− 53.95	69 48 9.85	+ 3 0.90	+ 2 34.6	16 36 6.41	− 4.44	121 0 6.6	− 3.9
	27	B. A. C. 5632		9	43 29.93	− 0.08	− 53.95	72 50 12.02	+ 5 2.93	+ 3 3.9	16 42 35.90	− 4.59	124 4 40.1	− 3.3
	28	B. A. C. 5639		9	45 15.07	− 0.02	− 53.95	79 16 14.80	+ 3 44.19	+ 4 54.3	16 44 21.10	− 4.92	130 31 14.5	− 3.4
	29	κ Ophiuchi		9	53 2.77	− 0.38	**− 53.93**	29 16 13.48	+ 3 15.10	+ 32.2	16 52 8.44	. .	80 26 22.0	− 3.3
	30	d Herculis		9	58 12.73	− 0.61	**− 53.93**	5 6 10.08	+ 2 55.27	+ 5.2	16 57 18.16	. .	56 15 31.8	− 2.4
	31	B. A. C. 5793		9	6 16.99	− 0.09	− 53.96	71 4 11.58	+ 4 17.90	+ 2 46.0	17 5 22.94	− 4.53	122 17 36.7	− 0.5
	32	α^1 Herculis		9	10 13.77	− 0.42	**− 53.90**	24 18 9.40	+ 3 26.53	+ 25.9	17 9 19.39	. .	75 28 23.0	− 2.4
	33	δ Ophiuchi		9	20 8.30	− 0.15	**− 54.05**	62 52 14.30	+ 3 23.54	+ 1 51.6	17 19 14.18	. .	114 3 50.6	− 3.2
R.	34	α Ceti		9	57 2.51	− 0.52	**− 54.00**	35 12 11.30	+ 3 6.87	+ 39.5	2 56 8.03	. .	86 22 18.9	− 2.6
	35	α Persei		9	16 50.88	− 0.97	**− 53.98**	349 24 9.90	+ 3 18.50	− 10.4	3 15 55.94	. .	40 33 39.2	− 1.0
	36	η Tauri		9	41 24.38	− 0.66	**− 54.03**	15 6 10.75	+ 2 51.19	+ 15.1	3 40 29.74	. .	66 15 38.2	− 2.0
	37	ζ Persei		8	47 39.08	− 0.72	**− 53.89**	7 18 . .	. . .	. .	3 46 44.37	. .	58 28 . .	. .
14	38	Sun I, N.		9	31 19.23	− 0.65	− 54.06	15 16 15.62	+ 3 53.18	+ 15.2	5 30 24.52	+68.73	66 26 45.2	. .
	39	Sun II, S.		9	33 36.70	− 0.65	− 54.06	15 48 11.95	+ 3 27.70	+ 15.7	5 32 41.99	−68.74	66 58 16.5	. .
	40	α Canis Majoris		9	40 52.08	− 0.42	**− 54.16**	55 22 8.62	+ 3 40.35	+ 1 19.8	6 39 57.55	. .	106 33 30.0	− 1.4
	41	ε Canis Majoris		9	54 54.04	− 0.36	**− 54.02**	67 36 0.65	+ 4 19.80	+ 2 13.1	6 53 59.56	. .	118 48 54.7	− 2.9
	42	δ Canis Majoris		8	4 30.61	− 0.38	**− 54.17**	65 0 1.42	+ 4 13.19	+ 1 57.8	7 3 36.10	. .	116 12 33.6	− 3.9
	43	Venus I, N.		9	38 31.17	− 0.65	− 54.15	15 33 58.58	+ 2 51.17	+ 15.4	7 37 36.37	+ 0.43	66 43 26.4	. .
	44	Venus S.		.	. . . .	. .	. .	15 33 58.58	+ 3 2.33	+ 15.4	7 37.6	. .	66 43 37.5	. .
W.	45	β Ursæ Min., S. P.		8	52 0.42	+ 1.89	− 54.74	293 30 9.88	+ 3 57.70	− 2 4.6	14 51 7.57	. .	344 38 24.2	+ 2.7
	46	α Ceti		9	57 3.30	− 0.54	**− 54.74**	35 12 18.28	+ 2 59.76	+ 38.6	2 56 8.02	. .	86 22 17.8	− 3.6
	47	α Persei		9	16 51.78	− 1.06	**− 54.76**	349 24 11.28	+ 3 18.39	− 10.2	3 15 55.98	. .	40 33 40.7	+ 0.4
	48	δ Persei		9	35 29.06	− 1.02	**− 54.70**	351 26 15.52	+ 3 3.21	− 8.2	3 34 33.30	. .	42 35 31.7	− 0.5
	49	η Tauri		9	41 25.14	− 0.70	**− 54.73**	15 6 10.88	+ 2 51.56	+ 14.7	3 40 29.70	. .	66 15 38.3	− 1.8
	50	ζ Persei		9	47 40.07	− 0.78	**− 54.79**	7 18 11.52	+ 3 26.65	+ 7.0	3 46 44.55	. .	58 28 6.4	− 1.0

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
3	29.91	82.5	83.0
4	29.85	75.0	73.5
9	29.87	70.5	69.0
10	29.88	76.2	81.9
13	29.88	82.4	85.3
17	30.19	70.0	68.2
20	30.21	67.0	64.8
33	30.20	64.1	61.5
34	30.19	69.8	73.7
37	30.18	72.2	75.2
39	30.16	75.0	78.6
42	30.14	77.8	81.4
44	30.12	79.5	81.9
46	29.90	75.2	80.7

For summary of the constants of reduction see page 3.

8. Three bisections.
3. Four bisections.

ZENITH-POINT CORR.

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1 to 3 + 45.96
4 to 9 + 48.21
10 to 13 + 46.35
15 to 33 + 53.84
34 to 44 + 52.90
45 to 50 + 53.62

37. Barometer and thermometers read at 3^h 55^m.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
1	− 1.5	− 6.4	0.0	− 7.9
2	− 1.5	+ 6.4	.	+ 4.9
13	− 2.4	− 15 46.8	.	− 15 49.2
38	− 2.3	+ 15 45.6	.	+ 15 43.3
39	− 2.4	− 15 45.6	.	− 15 48.0
43	− 1.6	+ 5.6	.	+ 4.0
44	− 1.6	− 5.5	0.0	− 7.1

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
June					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
15, W.	1	Sun I, N.		9	35 29.32	− 0.70	− 54.74	15 14 7.58	+ 3 26.66	+ 14.7	5 34 33.88	+68.85	66 24 10.1	. .
	2	Sun II, S.		9	37 47.03	− 0.70	− 54.74	15 46 8.32	+ 2 55.33	+ 15.2	5 36 51.59	−68.86	66 55 40.0	. .
16, W.	3	α Lyræ		9	33 57.17	− 0.77	**− 56.51**	0 10 16.10	+ 2 48.40	+ 0.2	18 32 59.99	. .	51 19 25.9	− 1.5
	4	51 Cephei, S. P.		8	45 25.91	+10.27	− 56.41	306 4 . .	. . . .	. .	6 44 39.77	. .	357 14 . .	. .
	5	σ Sagittarii		9	48 57.78	− 0.32	**− 56.34**	65 14 12.00	+ 3 45.12	+ 2 0.4	18 48 1.05	. .	116 26 18.7	− 1.6
	6	B. VI+20°, 4022		9	57 17.92	− 0.59	− 56.41	18 10 13.60	+ 2 59.79	+ 18.3	18 56 20.92	− 3.37	69 19 52.9	+ 6.2
	7	B. A. C. 6530		9	0 21.37	− 0.99	− 56.41	346 44 12.20	+ 4 11.24	− 13.1	18 59 23.97	− 3.29	37 54 31.5	+ 3.6
	8	Lalande 36268²		9	12 2.93	− 0.54	− 56.41	24 30 20.80	+ 2 31.71	+ 25.4	19 11 5.98	− 3.41	75 39 39.1	+ 7.4
	9	B. A. C. 6622		6	16 43.77	− 0.24	− 56.41	79 36 24.08	+ 2 17.69	+ 4 54.3	19 15 47.12	− 4.70	130 49 57.3	+14.8
	10	δ Aquilæ		9	20 33.31	− 0.47	**− 56.39**	35 56 10.18	+ 3 47.92	+ 40.4	19 19 36.43	. .	87 6 59.7	− 1.2
	11	B. A. C. 6711		9	30 30.32	0.77	− 56.41	0 20 21.08	+ 2 50.08	+ 0.4	19 29 33.14	− 3.25	51 29 32.8	+ 4.7
	12	B. A. C. 6728		9	33 47.83	0.83	− 56.41	355 24 18.62	+ 2 47.11	− 4.4	19 32 50.59	− 3.25	46 33 22.5	+ 4.2
	13	α Aquilæ		.	. . . .	. .	. .	30 16 20.38	+ 3 7.55	+ 32.6	19 45.1	. .	81 26 21.7	− 1.4
S.	14	α Ceti		9	57 5.07	− 0.59	**− 56.41**	35 12 12.48	+ 3 5.73	+ 38.5	2 56 58.01	. .	86 22 17.9	− 3.2
	15	α Persei		9	16 53.52	− 1.02	**− 56.47**	349 24 8.15	+ 3 19.37	− 10.1	3 15 56.03	. .	40 33 38.6	− 1.8
	16	η Tauri		9	41 26.96	− 0.71	**− 56.49**	15 6 . .	. . . .	. .	3 40 29.78	. .	66 16 . .	. .
	17	ζ Persei		9	47 41.85	− 0.78	**− 56.52**	7 18 . .	. . . .	. .	3 46 44.60	. .	58 28 . .	. .
17	18	Sun I, S.		9	43 50.27	− 0.71	− 56.47	15 42 9.80	+ 2 53.15	+ 15.2	5 42 53.09	+68.79	66 51 39.4	. .
	19	Sun II, N.		9	46 7.86	− 0.71	− 56.47	15 10 5.65	+ 3 27.03	+ 14.7	5 45 10.68	−68.80	66 20 8.6	. .
19, W.	20	ε Bootis		9	40 53.52	− 0.58	**− 60.00**	11 16 10.80	+ 2 55.59	+ 11.1	14 39 52.87	. .	62 25 38.7	− 2.3
	21	α² Libræ		3	45 24.80	− 0.07	**− 60.08**	54 22 12.32	+ 3 22.38	+ 1 17.3	14 44 24.65	. .	105 33 13.2	− 1.2
	22	β Ursæ Minoris		9	52 9.16	− 3.01	− 60.09	324 12 20.12	+ 3 33.81	− 39.8	14 51 6.06	. .	15 21 35.3	− 2.3
	23	β Bootis		9	58 33.88	− 0.83	**− 60.16**	357 58 23.98	+ 3 49.82	− 1.9	14 57 32.95	. .	49 8 33.1	− 1.3
	24	B. A. C. 4980		9	2 35.29	− 1.03	− 60.10	350 12 12.08	+ 5 3.83	− 9.5	15 1 34.16	− 2.74	41 23 27.6	+ 3.4
	25	α Cor. Bor. (R)		.	. . . .	. .	. .	168 10 15.92	+ 2 59.80	− 11.6	. . . .	. .	62 53 17.1	+ 2.5
	26	α Cor. Bor.		.	. . . .	. .	. .	11 42 15.68	+ 4 24.81	+ 11.6	15 29.7	. .	62 53 13.3	− 1.3
	27	σ Cor. Bor. (*med.*)		9	11 19.44	− 0.69	− 60.20	4 40 13.62	+ 3 48.83	+ 4.6	16 10 18.55	− 3.11	55 50 28.2	+ 2.6
	28	B. A. C. 5471		9	19 15.02	+ 0.11	− 60.21	70 12 7.88	+ 4 49.51	+ 2 33.6	16 18 14.92	− 4.47	121 25 52.2	− 6.3
	29	Lalande 30024¹		6	24 45.10	− 0.45	− 60.22	20 10 12.50	+ 3 17.04	+ 20.5	16 23 44.43	− 3.32	71 20 11.2	+ 1.0
	30	Lalande 30024²		5	24 45.32	− 0.45	− 60.22	20 10 12.50	+ 3 17.44	+ 20.5	16 23 44.65	− 3.32	71 20 11.6	+ 1.0
	31	B. A. C. 5568		9	33 48.93	− 0.98	− 60.24	351 58 5.42	+ 4 25.87	− 7.8	16 32 47.71	− 3.07	43 8 44.7	+ 4.4
	32	B. A. C. 5619		9	40 34.52	− 0.69	− 60.25	4 34 6.38	+ 3 57.20	+ 4.5	16 39 33.58	− 3.18	55 44 29.3	+ 3.3
	33	B. A. C. 5635		9	44 25.27	+ 0.24	− 60.25	79 46 13.18	+ 4 2.73	+ 4 59.8	16 43 25.26	− 5.02	131 1 36.9	− 4.2
	34	B. A. C. 5696		9	50 34.51	+ 0.13	− 60.26	71 52 9.42	+ 2 57.34	+ 2 48.8	16 49 34.38	− 4.62	123 4 16.8	− 2.8
	35	d Herculis		9	58 19.11	− 0.68	**− 60.23**	5 6 . .	. . . .	. .	16 57 18.16	. .	56 16 . .	. .
	36	Weisse (2) 1790		9	0 37.33	− 0.46	− 60.28	19 4 6.05	+ 3 20.92	+ 19.3	16 59 36.59	− 3.37	70 14 7.5	+ 2.7
	37	B. A. C. 5793		9	6 23.18	+ 0.12	− 60.29	71 4 6.32	+ 4 26.46	+ 2 41.7	17 5 23.01	− 4.61	122 17 35.7	− 0.9
	38	α¹ Herculis		9	10 20.13	− 0.40	**− 60.25**	24 18 9.78	+ 3 25.58	+ 25.3	17 9 19.44	. .	75 28 21.9	− 2.3
	39	b Ophiuchi		9	20 14.54	+ 0.02	**− 60.40**	62 52 10.28	+ 3 31.85	+ 1 48.8	17 19 14.25	. .	114 3 52.1	− 1.8
	40	Taylor 8095		9	25 53.62	+ 0.24	− 60.31	79 50 9.22	+ 3 28.50	+ 5 2.6	17 24 53.55	− 5.08	131 5 1.5	+ 1.0
E.	41	α Ceti		9	57 8.99	− 0.37	**− 60.48**	35 12 6.45	+ 3 9.19	+ 40.1	2 56 8.16	. .	86 22 16.9	− 3.7
	42	α Persei		9	16 57.50	− 0.92	**− 60.45**	349 24 2.52	+ 3 24.94	− 10.5	3 15 56.12	. .	40 33 38.2	− 2.4
	43	η Tauri		9	41 30.84	− 0.54	**− 60.47**	15 6 6.18	+ 2 52.77	+ 15.3	3 40 29.85	. .	66 15 35.5	− 4.4
	44	ζ Persei		9	47 45.62	− 0.63	**− 60.37**	7 18 11.40	+ 3 24.70	+ 7.3	3 46 44.54	. .	58 28 4.6	− 2.8
	45	γ¹ Eridani		9	53 33.12	− 0.25	**− 60.50**	52 40 12.02	+ 2 46.58	+ 1 14.1	3 52 32.42	. .	103 50 33.9	− 2.9
20	46	Sun I, N.		9	56 22.86	− 0.54	− 60.44	15 6 0.12	+ 4 37.75	+ 15.2	5 55 21.88	+68.86	66 17 14.3	. .
	47	Sun II, S.		9	58 40.59	− 0.54	− 60.44	15 38 7.65	+ 4 1.32	+ 15.8	5 57 39.61	−68.87	66 48 46.0	. .
	48	δ Geminorum		9	14 6.79	− 0.52	**− 60.45**	16 38 4.20	+ 3 28.69	+ 16.8	7 13 5.84	. .	67 48 10.9	− 2.9
	49	α² Geminorum		9	28 6.63	− 0.64	**− 60.41**	6 42 9.80	+ 2 40.43	+ 6.6	7 27 5.56	. .	57 51 18.0	− 3.2
S.	50	α Tauri		9	29 11.37	− 0.64	**− 60.35**	22 34 0.20	+ 2 59.63	+ 23.2	4 29 10.31	. .	73 43 44.2	− 2.4

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
2	29.88	83.4	89.1
3	29.76	71.4	68.7
13	29.75	70.7	68.7
14	29.75	76.5	80.6
19	29.76	82.9	86.2
20	29.84	75.4	72.9
27	29.87	73.7	71.9
40	29.88	71.0	68.7
41	30.10	65.5	65.2
47	30.11	71.3	71.4
49	30.12	75.0	75.5
50	30.20	72.8	75.5

For summary of the constants of reduction see page 3.

21, 24, 26. One bisection.

ZENITH-POINT CORR.

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1 to 2 + 53.62
3 to 13 + 53.31
14 to 19 + 51.88
20 to 40 + 52.28
41 to 49 + 51.57
50 + 52.40

49. Barometer and thermometers read at $9^h\ 0^m$.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
1	− 2.3	+ 15 44.9	.	+ 15 42.6
2	− 2.4	− 15 44.9	.	− 15 47.3
18	− 2.4	− 15 45.4	.	− 15 47.8
19	− 2.3	+ 15 45.3	.	+ 15 43.0
46	− 2.3	+ 15 45.8	.	+ 15 43.5
47	− 2.3	− 15 45.9	.	− 15 48.2

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
June					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
20, S.	1	ι Aurigæ		8	50 21.32	− 0.74	**− 60.45**	5 52 4.85	+ 2 49.04	+ 5.8	4 49 20.16	. .	57 1 20.9	− 3.0
	2	α Aurigæ		9	9 1.29	− 0.87	**− 60.46**	352 58 . .	. . .	. .	5 8 0.00	. .	44 8 . .	. .
	3	β Tauri		9	19 52.52	− 0.71	**− 60.41**	10 20 1.20	+ 3 6.73	+ 10.2	5 18 51.39	. .	61 29 39.3	− 2.7
21	4	Sun I, S.		9	0 32.64	− 0.68	− 60.42	15 38 5.58	+ 3 53.83	+ 15.6	5 59 31.54	+68.87	66 48 36.2	. .
	5	Sun II, N.		9	2 50.38	− 0.68	− 60.42	15 5 58.25	+ 4 31.89	+ 15.0	6 1 49.28	−68.87	66 17 6.3	. .
	6	α² Geminorum		9	28 6.77	− 0.73	**− 60.45**	6 42 2.35	+ 2 48.16	+ 6.5	7 27 5.61	. .	57 51 18.2	− 3.1
	7	α Canis Minoris		9	34 9.64	− 0.59	**− 60.45**	33 18 2.00	+ 3 32.84	+ 36.3	7 33 8.62	. .	84 28 32.3	− 2.9
	8	β Geminorum		9	39 8.11	− 0.71	**− 60.39**	10 32 1.12	+ 2 56.69	+ 10.3	7 38 6.97	. .	61 41 29.3	− 2.3
	9	Venus I, S.		6	14 25.80	− 0.67	− 60.43	17 6 2.00	+ 3 17.02	+ 17.0	8 13 24.70	+ 0.49	68 15 57.2	. .
	10	Venus II, N.		5	14 26.64	− 0.67	− 60.43	17 6 2.00	+ 3 4.71	+ 17.0	8 13 25.54	− 0.35	68 15 44.9	. .
	11	Moon I, N.		9	39 6.28	− 0.56	− 60.59	36 5 59.52	+ 3 1.78	+ 40.1	10 38 5.13	+61.16	87 16 2.6	. .
	12	α Ursæ Majoris		9	57 29.38	− 1.15	− 60.59	336 28 0.45	+ 2 42.31	− 23.8	10 56 27.64	. .	27 36 40.2	− 2.8
	13	δ Leonis		9	8 53.06	− 0.64	**− 60.52**	17 40 1.10	+ 3 15.27	+ 17.5	11 7 51.83	. .	68 49 55.1	− 2.1
	14	δ Crateris		9	14 29.72	− 0.51	**− 60.58**	52 57 57.68	+ 3 11.70	+ 1 12.8	11 13 28.62	. .	104 8 43.4	− 2.4
	15	β Leonis		9	44 5.76	− 0.61	**− 60.67**	23 35 56.38	+ 3 33.43	+ 24.1	11 43 4.55	. .	74 46 15.1	− 1.5
	16	π Virginis		9	55 53.02	− 0.58	− 60.60	31 32 4.10	+ 4 52.26	+ 33.9	11 54 51.84	− 2.29	82 43 51.5	−12.9
	17	ε Corvi		8	5 7.14	− 0.49	− 60.60	60 46 3.18	+ 4 6.13	+ 1 38.6	12 4 6.05	− 2.54	111 58 9.1	−22.9
	18	α² Can. Venat.		9	51 34.09	− 0.76	**− 60.64**	359 52 3.42	+ 4 13.01	− 0.1	12 50 32.72	. .	51 2 37.5	− 2.6
	19	ϑ Virginis		9	4 54.34	− 0.53	**− 60.59**	43 44 0.20	+ 3 29.47	+ 53.2	13 3 53.20	. .	94 54 44.1	− 2.3
	20	20 Can. Venat.		9	13 18.81	− 0.79	− 60.61	357 38 3.85	+ 3 56.88	− 2.2	13 12 17.41	− 2.34	48 48 19.7	− 0.2
	21	Polaris, S. P.		7	16 26.14	+16.72	− 60.61	307 32 2.38	+ 3 27.81	− 1 12.1	1 15 42.25	. .	358 40 39.3	1.2
	22	η Bootis		9	50 7.99	− 0.63	**− 60.64**	19 50 9.65	+ 3 50.01	+ 20.2	13 49 6.74	. .	71 0 41.1	− 1.2
	23	d Bootis (R)		.	. . . .	. .	. .	166 42 13.88	+ 3 22.30	− 13.2	. . . .	. .	64 20 58.2	− 2.8
	24	d Bootis		.	. . . .	. .	. .	13 10 13.25	+ 4 7.93	+ 13.2	14 5.0	. .	64 20 55.6	− 2.8
	25	ϑ Bootis (R)		.	. . . .	. .	. .	193 26 4.60	+ 3 54.79	+ 13.4	. . . .	. .	37 36 8.4	− 0.3
	26	ϑ Bootis		.	. . . .	. .	. .	346 26 4.65	+ 3 54.51	− 13.4	14 21.2	. .	37 36 7.0	− 1.7
	27	β Libræ		9	11 44.14	− 0.52	**− 60.61**	47 46 6.92	+ 3 23.24	+ 1 2.0	15 10 42.99	. .	98 56 53.4	− 2.9
	28	δ Ophiuchi		9	9 14.58	− 0.54	**− 60.66**	42 12 4.55	+ 4 5.50	+ 51.3	16 8 13.40	. .	93 23 22.5	− 2.4
	29	B. A. C. 5471		9	19 16.07	− 0.46	− 60.64	70 12 8.70	+ 4 46.61	+ 2 36.2	16 18 14.97	− 4.47	121 25 52.7	− 6.5
	30	Lalande 30024¹		6	24 45.80	− 0.63	− 60.64	20 10 6.65	+ 3 21.25	+ 20.8	16 23 44.53	− 3.31	71 20 9.9	+ 1.3
	31	Lalande 30024²		5	24 46.04	− 0.63	− 60.64	20 10 6.65	+ 3 21.97	+ 20.8	16 23 44.77	− 3.31	71 20 10.6	+ 1.3
	32	Lalande 30353		9	34 52.64	− 0.81	− 60.65	355 2 9.52	+ 3 26.30	− 4.9	16 33 51.18	− 3.08	46 11 52.1	+ 4.6
	33	B. A. C. 5619		9	40 35.10	− 0.72	− 60.65	4 34 4.62	+ 3 58.17	+ 4.6	16 39 33.73	− 3.17	55 44 28.6	+ 3.8
	34	B. A. C. 5718		9	55 20.51	− 0.46	− 60.65	70 48 6.10	+ 0 52.34	+ 2 41.0	16 54 19.40	− 4.59	121 58 0.6	− 2.4
	35	B. A. C. 5721		9	55 55.00	− 0.47	− 60.65	70 48 6.10	+ 7 52.05	+ 2 42.0	16 54 53.88	− 4.59	122 5 1.4	− 2.3
	36	b Ophiuchi		9	20 15.29	− 0.48	**− 60.63**	62 52 . .	. . .	. .	17 19 14.16	. .	114 4 . .	. .
R.	37	δ Persei		9	35 35.51	− 0.94	− 60.83	351 26 5.90	+ 3 12.68	− 8.3	3 34 33.74	. .	42 35 31.5	− 1.2
	38	η Tauri		9	41 31.46	− 0.73	**− 60.85**	15 6 1.62	+ 2 59.39	+ 15.0	3 40 29.90	. .	66 15 37.2	− 2.6
	39	ζ Persei		9	47 46.26	− 0.78	**− 60.81**	7 18 6.30	+ 3 31.32	+ 7.2	3 46 44.65	. .	58 28 6.0	− 1.4
	40	γ¹ Eridani		9	53 33.83	− 0.59	**− 60.83**	52 40 12.32	+ 2 48.10	+ 1 12.7	3 52 32.41	. .	103 50 34.3	− 2.0
	41	α Tauri (R)		.	. . . .	. .	. .	157 20 12.02	+ 2 43.66	− 23.0	. . . .	. .	73 43 48.5	+ 1.9
	42	α Tauri		.	. . . .	. .	. .	22 33 56.48	+ 3 2.15	+ 23.0	4 29.2	. .	73 43 42.8	− 3.8
22	43	Sun I, N.		9	4 42.79	− 0.73	− 60.88	15 6 5.40	+ 4 39.44	+ 14.9	6 3 41.18	+68.87	66 17 20.9	. .
	44	Sun, S.		.	. . . .	. .	. .	15 38 8.20	+ 4 6.29	+ 15.4	6 4.8	. .	66 48 51.1	. .
	45	β Ursæ Minoris		9	52 9.27	− 1.76	− 61.05	324 12 2.35	+ 3 55.73	− 40.2	14 51 6.46	. .	15 21 39.1	+ 2.1
	46	β Bootis		9	58 34.79	− 0.80	**− 61.14**	357 58 5.72	+ 4 6.90	− 1.9	14 57 32.94	. .	49 8 31.9	− 1.9
	47	48 Cephei (H.), S. P.		9	6 25.74	+ 1.27	− 61.06	296 10 7.08	+ 3 11.65	− 1 53.0	3 5 25.95	. .	347 17 46.9	− 1.7
	48	β Libræ		9	11 44.68	− 0.56	**− 61.11**	47 46 1.90	+ 3 28.78	+ 1 1.7	15 10 43.05	. .	98 56 53.6	− 2.7
	49	μ¹ Bootis		6	21 6.78	− 0.77	**− 61.15**	1 2 5.75	+ 3 57.77	+ 1.1	15 20 4.94	. .	52 12 25.8	− 1.5
	50	μ² Bootis	6.8	5	21 8.07	− 0.77	− 61.07	1 2 5.75	+ 5 44.59	+ 1.1	15 20 6.23	− 2.88	52 14 12.6	+ 2.5

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
5	30.20	75.7	79.3			4	− 2.3	− 15 44.9	.	− 15 47.2
6	30.18	78.5	81.0		ZENITH-POINT CORR.	5	− 2.3	+ 15 45.0	.	+ 15 42.7
10	30.19	81.0	81.9			9	− 1.9	− 6.1	0.0	− 8.0
12	30.14	79.1	83.5		″	10	− 1.9	+ 6.2	.	+ 4.3
22	30.14	75.5	74.0	11, 21, 39. Three bisections.	1 to 10 + 52.40	11	− 31 48.1	+ 14 48.1	.	− 17 0.0
28	30.17	70.0	68.5	40, 46. Four bisections.	11 to 35 + 52.72	43	− 2.3	+ 15 45.1	.	+ 15 42.8
36	30.16	68.8	67.0		37 to 44 + 50.94	44	− 2.3	− 15 45.1	.	− 15 47.4
37	30.23	73.5	77.4		45 to 50 + 51.59					
40	30.24	75.7	79.4							
42	30.24	79.3	83.4							
44	30.24	80.8	83.9							
45	30.18	75.8	74.2	42. Barometer and thermometers read at 5ʰ 10ᵐ.						
49	30.19	74.7	73.1							

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
June 22, R.	1	α Cor. Bor. (R)	.	.	. . . .	. .	. .	168 10 9.18	+ 3 9.99	— 11.7	. . . .	. .	62 53 13.7	— 0.3
	2	α Cor. Bor.	.	.	. . . .	. .	. .	11 42 4.72	+ 4 34.18	+ 11.7	15 29.7	. .	62 53 11.8	— 2.2
	3	γ Camelop., S. P.	.	8	38 57.55	+ 0.72	— 61.09	289 50 0.20	+ 4 3.56	— 2 33.4	3 37 57.18	— 2.06	340 57 51.6	+ 6.8
	4	β^1 Scorpii	.	6	59 40.23	— 0.54	— **61.08**	58 18 4.25	+ 3 0.78	+ 1 30.7	15 58 38.59	. .	109 28 56.9	— 2.4
	5	β^2 Scorpii	7.3	5	59 40.74	— 0.54	— 61.10	58 18 4.25	+ 2 48.34	+ 1 30.7	15 58 39.10	— 3.98	109 28 44.5	— 6.6
	6	Radcliffe 3513	7.0	9	7 49.29	— 1.04	— 61.11	340 38 9.10	+ 0 59.23	— 19.7	16 6 47.14	— 2.89	31 45 9.8	+ 6.0
	7	β Herculis	.	9	26 13.93	— 0.67	— **60.94**	17 4 2.15	+ 4 23.52	+ 17.3	16 25 11.93	. .	68 15 4.2	— 2.2
	8	B. A. C. 5557	.	9	32 58.12	— 0.52	— 61.13	69 0 4.60	+ 4 54.25	+ 2 25.6	16 31 56.47	— 4.46	120 13 45.6	— 4.8
	9	B. A. C. 5589	.	9	37 8.07	— 0.52	— 61.14	69 48 4.25	+ 3 10.37	+ 2 31.6	16 36 6.41	— 4.50	121 0 7.4	— 4.4
	10	B. A. C. 5632	.	9	43 37.59	— 0.51	— 61.14	72 50 8.20	+ 5 11.43	+ 3 0.4	16 42 35.94	— 4.65	124 4 41.2	— 4.0
	11	B. A. C. 5671	6.7	9	48 10.49	— 0.52	— 61.14	69 10 7.70	+ 4 35.66	+ 2 26.9	16 47 8.83	— 4.50	120 23 31.5	— 3.1
	12	B. A. C. 5718	.	9	55 20.98	— 0.52	— 61.15	70 48 3.42	+ 0 57.02	+ 2 39.9	16 54 19.31	— 4.58	121 58 1.5	— 2.4
	13	B. A. C. 5721	.	9	55 55.35	— 0.52	— 61.15	70 48 3.42	+ 7 57.85	+ 2 40.9	16 54 53.68	— 4.59	122 5 3.4	— 2.4
	14	Weisse (2) 1790	.	9	0 38.33	— 0.66	— 61.15	19 4 2.68	+ 3 23.91	+ 19.5	16 59 36.52	— 3.37	70 14 7.3	+ 3.2
	15	B. A. C. 5793	.	9	6 24.59	— 0.52	— 61.16	71 4 3.62	+ 4 29.29	+ 2 42.8	17 5 22.91	— 4.62	122 17 36.9	— 1.2
	16	Weisse 143	.	9	11 37.93	— 0.59	— 61.16	37 27 57.85	+ 4 16.46	+ 43.2	17 10 36.18	— 3.67	88 39 18.7	+ 2.2
	17	Weisse (2) 516	.	9	20 19.69	— 0.64	— 61.17	22 23 57.58	+ 4 33.43	+ 23.2	17 19 17.88	— 3.45	73 35 15.4	+ 3.8
	18	D. M. —0°, 3298	8.0	8	25 5.56	— 0.58	— 61.17	39 46 5.08	+ 3 17.83	+ 46.8	17 24 3.81	— 3.73	90 56 30.9	+ 3.0
	19	B. A. C. 5910	5.0	9	25 24.74	— 0.58	— 61.17	39 46 5.08	+ 4 31.19	+ 46.9	17 24 22.99	— 3.73	90 57 44.3	+ 3.0
	20	B. A. C. 5950	.	9	30 56.63	— 0.98	— 61.18	343 34 5.32	+ 3 47.01	— 16.5	17 29 54.47	— 3.20	34 43 57.0	+ 6.0
	21	B. A. C. 5951	.	7	31 2.04	— 0.98	— 61.18	343 34 5.32	+ 4 28.32	— 16.5	17 29 59.88	— 3.20	34 44 38.3	+ 6.0
	22	B. VI+14°, 3321	6.3	9	39 4.74	— 0.64	— 61.19	24 26 8.98	+ 5 58.82	+ 25.7	17 38 2.91	— 3.50	75 38 54.7	+ 4.6
	23	Lalande 32408	5.8	9	40 0.26	— 0.64	— 61.19	24 26 8.98	— 0 45.96	+ 25.5	17 38 58.43	— 3.50	75 32 9.7	+ 4.6
	24	Lacaille 7520	.	9	53 13.78	— 0.50	— 61.20	77 58 8.48	+ 5 13.80	+ 4 18.9	17 52 12.08	— 4.98	129 14 2.4	+ 4.2
	25	Weisse (2) 1764	.	9	57 22.28	— 0.74	— 61.20	5 34 3.30	+ 6 13.97	+ 5.6	17 56 20.34	— 3.32	56 46 44.1	+ 5.7
	26	Weisse (2) 1797	.	9	58 21.87	— 0.74	— 61.20	5 34 3.30	+ 0 40.22	+ 5.5	17 57 19.93	— 3.32	56 41 10.2	+ 5.7
	27	Weisse (2) 44	7.5	8	4 5.06	— 0.76	— 61.20	2 24 2.80	+ 5 4.47	+ 2.4	18 3 3.10	— 3.31	53 35 30.9	+ 5.8
	28	Weisse (2) 76	5.5	8	5 2.07	— 0.76	— 61.21	2 24 2.80	+ 6 0.99	+ 2.5	18 4 0.10	— 3.31	53 36 27.5	+ 5.8
	29	Weisse (2) 137	6.3	2	6 57.82	— 0.76	— 61.21	2 24 2.80	+ 2 49.84	+ 2.4	18 5 55.85	— 3.31	53 33 16.2	+ 5.8
	30	δ Ursæ Minoris	.	6	11 40.35	— 6.63	— 61.21	312 14 5.10	+ 3 52.98	— 1 1.7	18 10 32.51	. .	3 23 17.6	— 1.8
	31	α Lyræ	.	2	34 1.96	— 0.78	— **61.23**	0 10 9.72	+ 2 51.59	+ 0.2	18 32 59.95	. .	51 19 22.7	— 2.9
	32	51 Cephei, S. P.	.	5	45 35.01	+ 7.23	— 61.24	306 4 7.38	+ 4 19.89	— 1 16.9	6 44 41.00	. .	357 13 31.6	— 1.2
	33	ζ Aquilæ	.	9	1 4.57	— 0.64	— **61.20**	25 8 5.90	+ 3 35.81	+ 26.5	19 0 2.68	. .	76 18 29.4	— 1.9
	34	α′ Sagittarii	.	3	11 49.74	— 0.54	— **61.31**	57 58 7.42	+ 3 29.64	+ 1 29.9	19 10 47.94	. .	109 9 28.2	— 1.6
23, W.	35	θ Bootis	.	3	22 16.53	— 1.10	— 62.06	346 26 13.42	+ 3 46.65	— 13.3	14 21 13.37	. .	37 36 8.0	— 0.4
	36	ρ Bootis	.	9	27 50.23	— 0.75	— **62.02**	7 56 9.38	+ 3 55.91	+ 7.8	14 26 47.42	. .	59 6 34.3	— 2.2
	37	ε Bootis	.	9	40 55.60	— 0.71	— **61.99**	11 16 14.30	+ 2 51.72	+ 11.1	14 39 52.83	. .	62 25 38.3	— 2.1
	38	α^2 Libræ	.	9	45 27.12	— 0.40	— **62.10**	54 22 13.30	+ 3 19.43	+ 1 17.4	14 44 24.66	. .	105 33 11.3	— 2.9
	39	β Ursæ Min. (R)	.	.	. . . .	. .	. .	215 40 12.65	+ 3 52.06	+ 39.9	. . . .	. .	15 21 36.6	— 0.2
	40	β Ursæ Minoris	.	.	. . . .	. .	. .	324 12 10.48	+ 3 43.14	— 39.9	14 51.1	. .	15 21 34.9	— 1.9
	41	B. A. C. 5216	.	9	41 50.52	— 0.60	— 62.06	23 2 13.28	+ 3 29.68	+ 23.7	15 40 47.86	— 3.21	74 12 27.9	— 0.8
	42	ζ Ursæ Minoris	.	9	49 25.86	— 3.05	— 62.06	320 42 . .	. . . .	. .	15 48 20.75	. .	11 50 . .	. .
	43	δ Scorpii	.	9	54 27.97	— 0.36	— **62.11**	61 6 12.45	+ 2 55.72	+ 1 40.6	15 53 25.55	. .	112 17 10.0	— 2.3
	44	B. A. C. 5348	.	9	0 47.12	— 1.29	— 62.06	339 58 11.78	+ 2 48.18	— 20.2	15 59 43.77	— 2.83	31 7 1.0	+ 6.4
	45	φ Herculis	.	9	6 9.24	— 0.95	— 62.06	353 36 15.72	+ 2 41.16	— 6.2	16 5 6.23	— 2.95	44 45 11.9	+ 4.9
E.	46	α Persei	.	9	16 59.86	— 1.08	— **62.50**	349 24 17.65	+ 3 9.75	— 10.2	3 15 56.24	. .	40 33 38.4	— 2.4
	47	δ Persei	.	9	35 37.30	— 1.04	— **62.63**	351 26 13.55	+ 3 4.35	— 8.2	3 34 33.72	. .	42 35 30.9	— 1.9
	48	η Tauri	.	9	41 33.21	— 0.71	— **62.56**	15 6 10.50	+ 2 49.05	+ 14.8	3 40 29.95	. .	66 15 35.6	— 4.0
	49	ζ Persei	.	8	47 48.06	— 0.79	— **62.54**	7 18 13.75	+ 3 21.81	+ 7.1	3 46 [illegible].72	. .	58 28 3.9	— 3.4
	50	α Tauri	.	9	30 13.62	— 0.64	— **62.53**	22 34 12.00	+ 2 47.18	+ 22.7	4 29 10.[illegible]1	. .	73 43 43.1	— 3.2

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
17	30.16	72.5	70.7	ZENITH-POINT CORR.					
34	30.17	71.7	70.2	″					
37	30.12	77.7	76.8						
45	30.12	76.0	74.8	6, 34. One bisection. 1 to 34 + 51.59					
46	30.10	80.0	84.0	30. Three bisections. 35 to 45 + 51.32					
				32. Five bisections. 46 to 50 + 50.53					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
June 24, E.	1	Sun I, N.		9	13 3.40	— 0.71	— 62.60	15 8 11.80	+ 4 21.36	+ 14.7	6 12 0.09	+68.89	66 19 9.1	. .
	2	Sun II, S.		9	15 21.18	— 0.71	— 62.60	15 40 5.00	+ 3 58.07	+ 15.2	6 14 17.87	—68.89	66 50 39.5	. .
	3	α Canis Minoris		9	34 11.79	— 0.57	— 62.62	33 18 13.65	+ 3 23.31	+ 35.5	7 33 8.59	. .	84 28 33.7	— 1.3
	4	β Geminorum		9	39 10.41	— 0.76	— 62.64	10 32 12.08	+ 2 46.94	+ 10.1	7 38 7.02	. .	61 41 30.3	— 1.5
	5	Venus I, N.		9	29 30.06	— 0.68	— 62.65	17 54 7.22	+ 3 38.31	+ 17.4	8 28 26.73	+ 0.44	69 4 24.1	. .
	6	Venus S			. . . .	. .	. .	17 54 7.22	+ 3 50.90	+ 17.4	. . . .	. .	69 4 36.7	. .
26, R.	7	Sun I, N.		9	21 24.04	— 0.60	— 64.81	15 12 9.15	+ 3 48.88	+ 14.7	6 20 18.63	+68.79	66 22 33.9	. .
	8	Sun II, S.		9	23 41.62	— 0.60	— 64.81	15 44 5.58	+ 3 23.03	+ 15.3	6 22 36.21	—68.79	66 54 5.1	. .
	9	δ Draconis, S. P.		9	13 38.00	+ 2.06	— 64.81	286 20 11.98	+ 3 47.00	— 3 0.5	19 12 35.25	. .	337 27 19.7	— 0.5
	10	a^2 Geminorum		9	28 11.18	— 0.74	— 64.82	6 42 14.18	+ 2 37.72	+ 6.4	7 27 5.63	. .	57 51 19.5	— 2.2
	11	α Canis Minoris		9	34 13.81	— 0.38	— 64.82	33 18 9.00	+ 3 26.51	+ 35.4	7 33 8.62	. .	84 28 32.1	— 2.7
	12	β Geminorum		9	39 12.50	— 0.68	— 64.80	10 32 14.25	+ 2 44.23	+ 10.1	7 38 7.01	. .	61 41 29.8	— 2.1
	13	Venus I, N.		9	39 26.48	— 0.56	— 64.81	18 30 7.20	+ 2 50.96	+ 18.1	8 38.21.11	+ 0.45	69 39 37.5	. .
	14	Venus S.			. . . .	. .	. .	18 30 7.20	+ 3 4.66	+ 18.1	. . . .	. .	69 39 51.2	. .
W.	15	ζ Persei		9	47 51.37	— 0.64	— 65.92	7 18 6.22	+ 3 30.20	+ 7.1	3 46 44.87	. .	58 28 4.7	— 2.5
	16	γ^1 Eridani		9	53 38.52	— 0.18	— 65.82	52 40 11.68	+ 2 47.66	+ 1 12.1	3 52 32.48	. .	103 50 32.6	— 2.6
	17	γ Tauri		9	14 12.56	— 0.44	— 65.85	23 30 6.00	+ 2 37.20	+ 23.9	4 13 6.26	. .	74 39 28.3	— 2.2
	18	ε Tauri		9	22 51.52	— 0.47	— 65.88	19 53 59.72	+ 4 15.23	+ 20.0	4 21 45.19	. .	71 4 56.2	— 2.1
	19	α Tauri		9	30 16.84	— 0.44	— 65.89	22 34 3.05	+ 2 56.76	+ 22.9	4 29 10.54	. .	73 43 43.9	— 2.2
	20	ι Aurigæ		9	50 26.74	— 0.66	— 65.82	5 52 6.12	+ 2 47.95	+ 5.7	4 49 20.22	. .	57 1 21.0	— 3.2
27	21	Sun I, N.		9	25 34.11	— 0.52	— 65.87	15 13 54.10	+ 4 23.80	+ 14.9	6 24 27.72	+68.77	66 24 54.0	. .
	22	Sun II, S.		9	27 51.65	— 0.52	— 65.87	15 45 43.30	+ 4 5.12	+ 15.5	6 26 45.26	—68.77	66 56 25.1	. .
	23	a^1 Geminorum		6	28 11.80	— 0.64	— 65.86	6 42 5.38	+ 2 51.79	+ 6.4	7 27 5.30	— 1.39	57 51 24.8	— 7.1
	24	a^2 Geminorum		5	28 12.15	— 0.64	— 65.89	6 42 5.38	+ 2 47.86	+ 6.4	7 27 5.64	. .	57 51 20.8	— 0.9
	25	α Canis Minoris		9	34 14.80	— 0.34	— 65.84	33 18 5.88	+ 3 30.84	+ 35.7	7 33 8.59	. .	84 28 33.6	— 1.2
	26	β Geminorum		9	39 13.50	— 0.59	— 65.88	10 32 9.28	+ 2 50.37	+ 10.1	7 38 7.04	. .	61 41 30.9	— 1.1
	27	Venus I, N.		9	44 22.71	— 0.48	— 65.87	18 47 58.70	+ 3 24.88	+ 18.5	8 43 16.36	+ 0.45	69 58 3.3	. .
	28	Venus S.			. . . .	. .	. .	18 47 58.70	+ 3 38.90	+ 18.5	. . . .	. .	69 58 17.3	. .
	29	β Ursæ Minoris		5	52 15.00	— 2.66	— 66.28	324 12 4.58	+ 3 48.87	— 39.7	14 51 6.06	. .	15 21 34.9	— 1.3
	30	β Bootis		9	58 39.86	— 0.77	— 66.31	357 58 4.25	+ 4 8.16	— 1.9	14 57 32.81	. .	49 8 31.7	— 1.2
	31	β Libræ			. . . .	. .	. .	47 46 4.25	+ 3 27.35	+ 1 1.0	15 10.7	. .	98 56 53.8	— 2.2
	32	μ^1 Bootis		9	21 11.83	— 0.73	— 66.30	1 2 10.40	+ 3 52.61	+ 1.1	15 20 4.83	. .	52 12 25.3	— 1.0
	33	α Cor. Bor.		9	30 51.31	— 0.55	— 66.21	11 42 6.82	+ 4 31.53	+ 11.5	15 29 44.49	. .	62 53 11.1	— 2.0
	34	Moon I, N.		9	34 15.80	— 0.10	— 66.27	58 54 4.18	+ 4 24.62	+ 1 31.8	15 33 9.43	+68.65	110 6 21.8	. .
	35	Weisse (2) 1438		9	46 58.67	— 0.58	— 66.26	9 28 7.00	+ 3 57.88	+ 9.4	17 45 51.83	— 3.35	60 38 35.5	+ 6.9
	36	Weisse (2) 1764		9	57 27.28	— 0.64	— 66.25	5 34 8.35	+ 6 10.01	+ 5.6	17 56 20.39	— 3.34	56 46 45.2	+ 7.3
	37	Weisse (2) 1797		9	58 26.80	— 0.64	— 66.25	5 34 8.35	+ 0 33.18	+ 5.5	17 57 19.91	— 3.34	56 41 8.2	+ 7.3
	38	Weisse (2) 44		3	4 9.94	— 0.69	— 66.25	2 24 . .	. . . .	. .	18 3 3.00	— 3.33	53 36 . .	. .
	39	Weisse (2) 76		9	5 6.79	— 0.69	— 66.25	2 24 7.15	+ 5 57.31	+ 2.4	18 3 59.85	— 3.33	53 36 28.1	+ 7.5
	40	Weisse (2) 137		9	7 2.92	— 0.69	— 66.25	2 24 7.15	+ 2 46.67	+ 2.5	18 5 55.98	— 3.33	53 33 17.5	+ 7.5
	41	η Serpentis		9	16 22.53	— 0.24	— 66.21	41 44 15.25	+ 4 7.32	+ 50.0	18 15 16.04	. .	92 55 33.8	— 0.2
	42	B. A. C. 6288		9	22 8.62	— 2.20	— 66.25	327 22 5.30	+ 4 29.02	— 35.7	18 21 0.17	— 3.68	18 32 19.8	+ 7.4
	43	1 Aquilæ		9	29 57.53	— 0.20	— 66.23	47 8 11.88	+ 3 49.44	+ 1 0.4	18 28 51.08	. .	98 19 22.9	— 0.4
	44	α Lyræ		9	34 7.03	— 0.73	— 66.31	0 10 14.08	+ 2 47.65	+ 0.2	18 33 0.05	. .	51 19 23.1	— 0.9
	45	51 Cephei, S. P.		5	45 31.66	+14.43	— 66.24	306 4 6.88	+ 4 21.12	— 1 16.5	6 44 39.85	. .	357 13 32.7	+ 1.7
29, S.	46	α Cor. Bor.		9	29 52.38	— 0.51	— 7.34	11 42 11.10	+ 4 27.05	+ 11.5	15 29 44.54	. .	62 53 10.9	— 1.8
	47	ε Serpentis		8	45 7.09	— 0.30	— 7.33	34 0 11.50	+ 2 47.30	+ 37.4	15 44 59.45	. .	85 9 57.4	— 2.7
	48	B. A. C. 5735		9	57 15.79	— 0.01	— 7.37	72 44 7.28	+ 3 55.28	+ 2 57.6	16 57 8.41	— 4.70	123 57 21.4	— 2.6
	49	B. A. C. 5781		9	3 48.30	— 0.15	— 7.37	54 24 6.98	+ 2 49.52	+ 1 17.8	17 3 40.78	— 4.07	105 34 35.5	+ 0.6
	50	B. VI + 53°, 1937		9	19 23.87	— 0.99	— 7.38	345 18 14.15	+ 3 31.28	— 14.6	17 19 15.50	— 3.12	36 27 52.0	+ 8.3

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
2	30.10	85.8	89.6
5	30.05	90.5	92.2
8	29.95	86.0	88.4
9	29.96	88.3	89.4
12	29.95	88.7	89.4
16	30.11	78.4	81.3
20	30.10	79.3	82.3
22	30.07	82.6	84.4
26	30.07	85.0	87.3
28	30.06	86.7	87.7
29	30.02	78.2	77.2
35	29.99	72.3	70.8
45	29.98	70.8	69.8
46	29.96	76.8	75.2
49	29.96	75.8	71.8

For summary of the constants of reduction see page 3.

23, 25. One bisection.
10. Three bisections.
34. Five bisections.

ZENITH-POINT CORR.

	″
1 to 6	+ 50.53
7 to 14	+ 48.66
15 to 28	+ 50.20
29 to 45	+ 51.02
46 to 50	+ 51.66

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
1	— 2.3	+ 15 45.2	.	+ 15 42.9
2	— 2.3	— 15 45.2	.	— 15 47.5
5	— 2.0	+ 6.3	.	+ 4.3
6	— 2.0	— 6.3	+0.1	— 8.2
7	— 2.3	+ 15 45.5	.	+ 15 43.2
8	— 2.4	— 15 45.6	.	— 15 48.0
13	— 2.1	+ 6.9	.	+ 4.8
14	— 2.1	— 6.9	+0.1	— 8.9
21	— 2.3	+ 15 45.5	.	+ 15 43.2
22	— 2.4	— 15 45.5	.	— 15 47.9
27	— 2.1	+ 7.0	.	+ 4.9
28	— 2.1	— 7.0	+0.1	— 9.0
34	— 48 40.6	+ 15 33.3	.	— 33 7.3

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
June 29, S.	1	Taylor 8095		9	25 0.70	+ 0.05	— 7.38	79 50 15.58	+ 3 24.17	+ 5 1.8	17 24 53.37	— 5.14	131 5 2.8	+ 0.1
	2	Moon I		9	33 13.79	— 0.10	— 7.39	60 48 . .	. . .	. .	17 33 6.30	+71.56	111 9 . .	. .
	3	μ Herculis		9	42 1.73	— 0.52	— 7.38	11 2 13.15	+ 3 39.83	+ 11.0	17 41 53.82	. .	62 12 25.2	— 2.3
	4	Lalande 32707		9	47 40.74	— 0.31	— 7.39	32 42 14.78	+ 3 3.36	+ 35.9	17 47 33.04	— 3.67	83 52 15.2	+ 6.2
	5	γ^2 Sagittarii		9	58 25.77	— 0.04	— 7.42	69 12 18.08	+ 4 12.99	+ 2 26.6	17 58 18.33	. .	120 25 18.9	— 2.6
	6	μ Sagittarii		9	6 54.27	— 0.11	— 7.45	59 54 5.40	+ 3 6.76	+ 1 36.3	18 6 46.76	. .	111 5 9.7	— 1.8
	7	δ Ursæ Minoris		7	10 49.24	—10.83	— 7.40	312 14 3.92	+ 3 52.66	— 1 1.5	18 10 31.01	. .	3 23 16.3	— 0.6
	8	1 Aquilæ		9	28 58.68	— 0.20	— 7.36	47 8 11.00	+ 3 47.79	+ 1 0.4	18 28 51.07	. .	98 19 20.4	— 2.7
July 1, W.	9	δ Ophiuchi		9	8 22.68	— 0.41	— 8.91	42 12 12.28	+ 3 58.52	+ 49.8	16 8 13.30	. .	93 23 21.8	— 2.2
	10	τ Herculis		5	16 24.51	— 0.89	— 9.05	352 14 4.98	+ 3 50.79	— 7.4	16 16 14.64	. .	43 24 9.6	— 1.6
	11	α Scorpii		9	22 23.93	— 0.29	— 8.95	64 58 5.32	+ 3 46.06	+ 1 57.1	16 22 14.65	. .	116 10 9.7	— 3.5
	12	β Herculis		9	25 21.71	— 0.58	— 9.03	17 4 1.25	+ 4 22.53	+ 16.9	16 25 12.13	. .	68 15 1.9	— 2.6
	13	B. A. C. 5557		9	32 5.78	— 0.27	— 9.00	69 0 9.18	+ 4 52.78	+ 2 22.3	16 31 56.51	— 4.48	120 13 45.5	— 5.1
	14	B. A. C. 5589		9	36 15.69	— 0.26	— 9.01	69 48 7.32	+ 3 10.22	+ 2 28.4	16 36 6.42	— 4.52	121 0 7.1	— 4.7
	15	B. A. C. 5619		9	39 43.43	— 0.71	— 9.01	4 34 9.40	+ 3 51.05	+ 4.5	16 39 33.71	— 3.13	55 44 26.1	+ 6.4
	16	B. A. C. 5665		9	46 48.38	— 0.26	— 9.02	69 20 7.35	+ 4 29.13	+ 2 25.0	16 46 39.10	— 4.54	120 33 22.7	— 3.4
	17	Stone 9178		3	47 9.06	— 0.26	— 9.03	69 20 7.35	+ 2 34.23	+ 2 24.7	16 46 59.77	— 4.54	120 31 27.5	— 3.4
	18	B. A. C. 5734		5	55 23.61	— 1.33	— 9.04	336 16 8.70	+ 4 38.79	— 24.1	16 55 13.24	— 2.95	27 26 44.6	+ 9.2
	19	B. A. C. 5753		9	58 26.91	— 0.52	— 9.04	25 4 4.20	+ 2 36.42	+ 25.8	16 58 17.35	— 3.47	76 13 27.6	+ 4.4
	20	B. A. C 5757		8	58 45.22	— 0.52	— 9.04	25 4 4.20	+ 4 44.19	+ 25.8	16 58 35.66	— 3.47	76 15 35.4	+ 4.4
	21	B. A. C. 5804		9	7 48.59	— 0.25	— 9.05	72 12 10.50	+ 3 14.52	+ 2 50.0	17 7 39.29	— 4.72	123 24 36.2	— 1.4
	22	Weisse (2) 308		9	13 3.64	— 0.55	— 9.06	21 22 7.40	+ 4 18.24	+ 21.6	17 12 54.03	— 3.45	72 33 8.4	+ 5.6
	23	B. A. C. 5891		9	21 11.32	— 0.23	— 9.07	75 26 6.92	+ 4 41.67	+ 3 29.4	17 21 2.02	— 4.91	126 40 39.2	— 0.2
	24	B. A. C. 5925		9	27 13.98	— 0.25	— 9.08	71 14 11.25	+ 6 36.42	+ 2 41.5	17 27 4.65	— 4.72	122 29 50.4	+ 1.0
	25	B. A. C. 5972		9	32 40.60	— 1.64	— 9.09	330 38 3.08	+ 3 18.96	— 31.0	17 32 29.87	— 3.21	21 47 12.2	+ 9.3
	26	B. VI + 14°, 3321		9	38 12.60	— 0.53	— 9.10	24 26 6.10	+ 5 59.45	+ 25.2	17 38 2.97	— 3.55	75 38 52.0	+ 6.6
	27	Lalande 32408		9	39 8.11	— 0.53	— 9.10	24 26 6.10	— 0 45.31	+ 25.1	17 38 58.48	— 3.55	75 32 7.1	+ 6.7
	28	Weisse 912		9	46 49.92	— 0.44	— 9.11	37 28 8.10	+ 4 32.16	+ 42.4	17 46 40.37	— 3.77	88 39 43.9	+ 6.0
	29	B. A. C. 6076		9	52 23.84	— 0.25	— 9.12	72 10 10.62	+ 4 18.03	+ 2 50.4	17 52 14.47	— 4.78	123 23 40.2	+ 3.9
	30	γ^2 Sagittarii		9	58 27.83	— 0.27	— 9.24	69 12 9.82	+ 4 21.97	+ 2 24.8	17 58 18.43	. .	120 25 17.8	— 3.8
	31	μ Sagittarii		9	6 56.14	— 0.32	— 9.10	59 54 5.98	+ 3 6.23	+ 1 35.3	18 6 46.68	. .	111 5 8.7	— 2.7
	32	δ Ursæ Minoris		6	10 49.33	— 9.50	— 9.14	312 14 3.90	+ 3 50.61	— 1 0.7	18 10 30.69	. .	3 23 15.0	— 1.3
	33	1 Aquilæ		9	29 0.59	— 0.38	— 9.07	47 8 10.52	+ 3 48.52	+ 59.7	18 28 51.06	. .	98 19 19.9	— 3.0
	34	α Lyræ		9	33 9.98	— 0.76	— 9.20	0 10 10.05	+ 2 48.51	+ 0.2	18 33 0.05	. .	51 19 20.0	— 2.8
2, S.	35	γ Tauri		9	13 16.69	— 0.52	— 9.76	23 30 5.75	+ 2 36.89	+ 24.2	4 13 6.33	. .	74 39 28.0	— 1.9
	36	ε Tauri		9	21 55.68	— 0.54	— 9.83	19 54 2.02	+ 4 11.91	+ 20.2	4 21 45.30	. .	71 4 55.3	— 2.6
	37	α Tauri		9	29 20.99	— 0.52	— 9.82	22 34 5.10	+ 2 53.75	+ 23.1	4 29 10.63	. .	73 43 43.1	— 2.5
	38	α Aurigæ		9	8 10.87	— 0.78	— 9.83	352 58 . .	. . .	. .	5 8 0.25	. .	44 8 . .	. .
	39	β Orionis		8	9 3.46	— 0.41	— 9.96	47 10 9.55	+ 2 45.72	+ 59.7	5 8 53.21	. .	98 20 16.2	— 3.6
3	40	Sun I, S.		9	49 27.92	— 0.56	— 9.84	16 7 54.40	+ 4 28.32	+ 16.0	6 49 17.52	+68.60	67 18 59.9	. .
5, W.	41	β Bootis		9	57 44.91	— 0.66	— 11.59	357 58 7.98	+ 4 2.97	— 1.9	14 57 32.69	. .	49 8 30.2	— 1.3
	42	48 Cephei (H.), S. P.		9	5 39.23	— 0.26	— 11.56	296 10 5.18	+ 3 13.49	— 1 53.6	3 5 27.41	. .	347 17 46.3	— 0.8
	43	β Libræ		9	10 55.20	— 0.72	— 11.55	47 46 6.00	+ 3 23.30	+ 1 2.0	15 10 42.92	. .	98 56 52.5	— 3.1
	44	μ^1 Bootis		9	20 16.91	— 0.66	— 11.55	1 2 5.22	+ 3 54.55	+ 1.1	15 20 4.69	. .	52 12 22.1	— 2.7
	45	α Cor. Bor. (R)		.	. . .	. .	. .	168 10 9.20	+ 3 11.08	— 11.7	. . . .	. .	62 53 12.6	+ 0.9
	46	α Cor. Bor.		.	. . .	. .	. .	11 42 7.20	+ 4 29.74	+ 11.7	15 29.7	. .	62 53 9.8	— 1.9
	47	γ Camelop., S. P.		9	38 10.37	— 0.34	— 11.56	289 50 5.42	+ 3 58.09	— 2 34.2	3 37 58.47	— 2.91	340 57 50.5	+ 8.6
	48	B. A. C. 5230		9	43 43.48	— 0.70	— 11.57	41 54 1.05	+ 2 51.82	+ 50.6	15 43 31.21	— 3.50	93 4 4.7	— 3.6
	49	B. A. C. 5284		9	51 15.58	— 0.67	— 11.57	22 46 3.28	+ 4 15.99	+ 23.7	15 51 3.34	— 3.19	73 57 4.2	+ 1.6
	50	B. A. C. 5348		9	59 55.77	— 0.68	— 11.57	339 58 3.10	+ 2 53.15	— 20.5	15 59 43.52	— 2.58	31 6 56.9	+ 9.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
8	29.95	72.2	69.2	ZENITH-POINT CORR.	40	— 2.4	— 15 44.6	.	— 15 47.0
9	29.79	78.1	77.4	″					
32	29.77	73.6	72.3	16, 17. One bisection. 1 to 8 + 51.66					
35	30.03	72.0	75.1	7, 42. Three bisections. 9 to 34 + 51.82					
40	30.02	77.9	80.7	35 to 40 + 51.83					
41	29.90	66.6	66.5	41 to 50 + 53.15					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 5, W.	1	φ Herculis		9	5 18.29	— 0.66	— 11.57	353 36 5.90	+ 2 48.16	— 6.3	16 5 6.06	— 2.82	44 45 9.0	+ 7.8
	2	17¹ Draconis		6	33 41.75	— 0.67	— 11.57	345 40 7.38	+ 3 51.91	— 14.4	16 33 29.51	— 2.85	36 50 6.1	+ 9.3
	3	17² Draconis		5	33 42.19	— 0.67	— 11.57	345 40 7.38	+ 3 53.66	— 14.4	16 33 29.95	— 2.85	36 50 7.8	+ 9.3
	4	B. A. C. 5629		9	40 49.04	— 0.67	— 11.57	342 56 2.50	+ 3 15.45	— 17.3	16 40 36.80	— 2.85	34 5 21.9	+ 9.6
	5	B. A. C. 5635		9	43 37.48	— 0.84	— 11.57	79 46 6.62	+ 4 5.78	+ 5 4.6	16 43 25.07	— 5.04	131 1 38.2	— 5.9
	6	B. A. C. 5653		9	45 47.60	— 0.79	— 11.57	70 28 5.35	+ 3 43.30	+ 2 38.5	16 45 35.24	— 4.58	121 40 48.3	— 4.1
	7	B. A. C. 5696		9	49 46.69	— 0.80	— 11.57	71 52 8.18	+ 2 55.62	+ 2 51.3	16 49 34.32	— 4.65	123 4 16.3	— 3.8
	8	B. A. C. 5735		9	57 20.70	— 0.80	— 11.57	72 44 6.82	+ 3 51.33	+ 3 0.6	16 57 8.33	— 4.72	123 57 20.0	— 3.1
	9	Weisse (2) 1790		9	59 48.82	— 0.67	— 11.57	19 4 5.00	+ 3 16.84	+ 19.6	16 59 36.58	— 3.38	70 14 2.6	+ 5.9
	10	B. A. C. 5781		9	3 53.11	— 0.73	— 11.57	54 24 3.52	+ 2 49.92	+ 1 19.1	17 3 40.81	— 4.09	105 34 33.7	+ 0.6
	11	B. A. C. 5804		9	7 51.63	— 0.80	— 11.57	72 12 8.82	+ 3 11.60	+ 2 54.9	17 7 39.26	— 4.73	123 24 36.5	— 1.8
	12	B. A. C. 5818		9	9 38.32	— 0.78	— 11.57	69 0 9.05	+ 4 4.77	+ 2 26.9	17 9 25.97	— 4.60	120 13 1.9	— 1.1
	13	Weisse (2) 308		9	13 6.30	— 0.67	— 11.57	21 22 7.32	+ 4 17.30	+ 22.2	17 12 54.06	— 3.45	72 33 8.0	+ 6.3
	14	B. VI+53°, 1937		9	19 27.80	— 0.67	— 11.57	345 18 6.62	+ 3 35.95	— 14.8	17 19 15.56	— 3.08	36 27 49.0	+ 9.9
	15	B. A. C. 5891		9	21 14.22	— 0.81	— 11.57	75 26 12.25	+ 4 29.90	+ 3 35.4	17 21 1.84	— 4.92	126 40 38.8	— 0.6
	16	Taylor 8095		9	25 5.73	— 0.84	— 11.57	79 50 8.45	+ 3 24.55	+ 5 6.8	17 24 53.32	— 5.17	131 5 1.0	— 0.7
	17	B. A. C. 5925		9	27 16.93	— 0.79	— 11.57	71 16 6.70	+ 4 35.79	+ 2 46.1	17 27 4.57	— 4.73	122 29 49.8	+ 0.6
	18	B. A. C. 5950		6	30 6.65	— 0.67	— 11.57	343 34 5.48	+ 3 43.27	— 16.6	17 29 54.41	— 3.12	34 43 53.4	+10.1
	19	B. A. C. 5951		5	30 12.15	— 0.67	— 11.57	343 34 5.48	+ 4 24.33	— 16.6	17 29 59.91	— 3.12	34 44 34.4	+10.1
	20	B. A. C. 5970		9	34 37.01	— 0.83	— 11.57	77 42 9.45	+ 5 11.94	+ 4 15.5	17 34 24.61	— 5.07	128 57 58.1	+ 0.8
	21	B. VI+14°, 3321		9	38 15.21	— 0.68	— 11.57	24 26 3.95	+ 6 1.23	+ 25.9	17 38 2.96	— 3.55	75 38 52.3	+ 7.2
	22	Lalande 32408		9	39 10.73	— 0.68	— 11.57	24 26 3.95	— 0 44.52	+ 25.7	17 38 58.48	— 3.56	75 32 6.3	+ 7.3
	23	B. A. C. 6016		9	41 47.64	— 0.79	— 11.57	70 28 8.08	+ 2 26.45	+ 2 38.7	17 41 35.28	— 4.72	121 39 34.4	+ 2.5
	24	B. A. C. 6029		9	44 38.58	— 0.80	— 11.58	73 30 7.62	+ 6 12.26	+ 3 10.1	17 44 26.20	— 4.87	124 45 51.2	+ 2.5
	25	B. A. C. 6037		9	45 44.81	— 0.80	— 11.58	73 30 7.62	+ 2 16.55	+ 3 9.4	17 45 32.43	— 4.86	124 41 54.8	+ 2.6
	26	B. A. C. 6057		9	48 50.07	— 0.79	— 11.58	71 14 4.68	+ 3 54.03	+ 2 45.8	17 48 37.70	— 4.76	122 27 5.7	+ 3.2
	27	Weisse (2) 1591		9	51 9.12	— 0.67	— 11.58	16 20 8.42	+ 4 2.56	+ 16.7	17 50 56.87	— 3.47	67 30 48.9	+ 8.5
	28	B. A. C. 6095		9	54 38.81	— 0.66	— 11.58	355 24 4.90	+ 3 46.81	— 4.5	17 54 26.57	— 3.28	46 34 8.4	+ 9.8
	29	Weisse (2) 1941		9	1 41.89	— 0.66	— 11.58	6 36 7.05	+ 3 58.03	+ 6.6	18 1 29.65	— 3.39	57 46 32.9	+ 9.4
	30	μ Sagittarii		9	6 59.02	— 0.75	— 11.52	59 54 2.58	+ 3 6.19	+ 1 37.7	18 6 46.69	. .	111 5 7.7	— 3.7
	31	δ Ursæ Minoris		5	10 43.28	— 1.51	— 11.58	312 14 2.02	+ 3 53.00	— 1 2.3	18 10 30.19	. .	3 23 13.9	— 1.3
	32	η Serpentis		9	15 28.40	— 0.70	— 11.56	41 44 5.42	+ 4 13.81	+ 50.7	18 15 16.12	. .	92 55 31.1	— 2.0
	33	B. A. C. 6289 (R)		.	. . .	. .	. .	199 46 7.60	+ 4 1.89	+ 20.5	. . . .	. .	31 15 51.2	+10.1
	34	B. A. C. 6289		8	22 26.98	— 0.68	— 11.58	340 6 10.40	+ 3 40.04	— 20.5	18 22 14.72	— 3.37	31 15 51.1	+10.1
	35	1 Aquilæ		9	29 3.47	— 0.72	— 11.57	47 8 6.60	+ 3 50.61	+ 1 1.2	18 28 51.17	. .	98 19 19.6	— 3.0
	36	Weisse 710		9	31 6.06	— 0.69	— 11.58	29 48 7.25	+ 2 56.50	+ 32.6	18 30 53.79	— 3.72	80 57 57.6	+ 9.7
	37	B. A. C. 6359		9	35 58.66	— 0.82	— 11.58	77 12 3.58	+ 3 26.21	+ 4 5.5	18 35 46.26	— 5.05	128 25 56.5	+ 8.5
	38	B. A. C. 6417		5	39 11.14	— 1.04	— 11.58	315 34 3.05	+ 3 33.80	— 55.5	18 38 58.52	— 5.47	6 43 2.5	+ 9.4
	39	O. Arg. N. 18618		5	42 48.19	— 0.67	— 11.58	344 4 6.00	+ 3 16.77	— 16.2	18 42 35.94	— 3.44	35 13 27.8	+10.0
	40	B. A. C. 6414		9	45 24.09	— 0.79	— 11.58	69 40 10.82	+ 3 5.81	+ 2 32.4	18 45 11.72	— 4.69	120 52 10.2	+ 9.8
	41	B. A. C. 6435		9	47 40.27	— 0.82	— 11.58	76 16 5.00	+ 5 32.34	+ 3 49.5	18 47 27.87	— 4.99	127 31 48.0	+ 9.9
	42	B. A. C. 6444		9	48 57.59	— 0.82	— 11.58	76 16 5.00	+ 3 5.92	+ 3 48.8	18 48 45.19	— 4.98	127 29 20.9	+10.1
	43	O. Arg. N. 18836		9	56 10.29	— 0.70	— 11.58	333 44 5.12	+ 3 51.76	— 28.0	18 55 58.01	— 3.64	24 53 50.1	+ 9.6
	44	Weisse (2) 1757		9	57 59.92	— 0.67	— 11.58	19 20 12.88	+ 3 28.24	+ 20.0	18 57 47.67	— 3.61	70 30 22.3	+10.9
	45	B. A. C. 6530		4	59 36.35	— 0.67	— 11.58	346 44 8.12	+ 4 9.47	— 13.3	18 59 24.10	— 3.48	37 54 25.5	+10.0
	46	B. A. C. 6541		9	2 12.04	— 0.83	— 11.58	78 16 6.40	+ 4 27.42	+ 4 28.1	19 1 59.63	— 5.06	129 31 23.1	+11.6
	47	d Sagittarii		9	11 0.41	— 0.74	— 11.59	57 58 6.52	+ 3 27.75	+ 1 30.8	19 10 48.09	. .	109 9 26.3	— 2.8
	48	B. A. C. 6599		9	12 32.26	— 0.66	— 11.58	0 54 6.10	+ 3 51.89	+ 1.0	19 12 20.02	— 3.50	52 4 20.2	+10.6
	49	δ Aquilæ		9	19 49.09	— 0.69	— 11.65	35 56 7.15	+ 3 45.30	+ 41.3	19 19 36.82	. .	87 6 54.9	— 2.6
	50	Lalande 36715		9	21 11.07	— 0.68	— 11.58	26 2 . .	. . .	. .	19 20 58.81	— 3.69	77 12 . .	. .

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
8	29.90	64.6	62.8	ZENITH-POINT CORR.					
30	29.91	63.7	61.7	″					
48	. .	. .	60.9	1 to 49 + 53.15					

45. One bisection.
38. Three bisections.
31. Five bisections.

			Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
	m. s.		s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
	29 45.73		− 0.67	− 11.58	0 20 9.30	+ 2 56.69	+ 0.3	19 29 33.48	− 3.53	51 29 27.5	+10.6
	13 18.87		− 0.67	− 11.71	23 30 5.58	+ 2 35.04	+ 24.5	4 13 6.42	. .	74 39 26.3	− 3.4
	8 12.87		− 0.72	− 11.81	352 58 7.48	+ 3 8.30	− 6.9	5 8 0.33	. .	44 7 30.1	− 2.5
	9 5.68		− 0.68	− 11.86	47 10 5.85	+ 2 47.41	+ 1 0.5	5 8 53.18	. .	98 20 15.0	− 4.2
	30 27.30		− 0.67	− 11.86	40 6 1.62	+ 3 30.93	+ 47.3	5 30 14.80	. .	91 16 41.1	− 2.6
	22 1.38		− 0.68	− 12.02	46 58 4.00	+ 3 40.93	+ 59.5	9 21 48.73	+ 0.47	98 9 5.6	− 2.4
	26 40.33		− 0.67	− 11.97	21 55 58.78	+ 3 45.33	+ 22.4	9 26 27.69	. .	73 6 27.7	. .
	. . .		. .	. .	21 55 58.78	+ 4 0.37	+ 22.4	. . . .	. .	73 6 42.8	. .
	2 19.42		− 0.67	− 11.92	26 18 5.08	+ 2 39.81	+ 27.4	10 2 6.75	. .	77 27 33.5	− 2.0
	13 42.30		− 0.67	− 12.03	18 24 3.10	+ 3 8.49	+ 18.5	10 13 29.63	. .	69 33 51.3	− 2.1
	29 57.24		− 0.64	− 12.14	11 42 14.50	+ 4 20.84	+ 11.7	15 29 44.43	− 3.84	62 53 8.2	− 3.3
6.3	31 41.50		− 0.67	− 12.17	59 26 16.60	+ 3 24.08	+ 1 35.2	15 31 28.66	. .	110 37 37.1	− 9.3
	38 43.47		− 0.63	− 12.18	32 2 6.90	+ 3 2.08	+ 35.3	15 38 30.67	. .	83 12 5.5	− 3.9
	45 12.24		− 0.64	− 12.18	34 0 5.92	+ 2 51.06	+ 38.1	15 44 59.43	. .	85 9 56.3	− 2.9
	48 33.17		− 1.09	− 12.17	320 42 2.58	+ 2 44.63	− 46.0	15 48 19.91		11 50 22.4	− 2.6
	52 58.04		− 0.64	− 12.18	11 36 5.25	+ 4 1.09	+ 11.6	15 52 45.23	. .	62 46 39.1	− 3.2
	. . . .		. .	. .	199 56 7.02	+ 2 54.35	+ 20.5	. . . .	. .	31 6 59.3	+ 9.5
5	59 56.31		− 0.72	− 12.18	339 58 6.55	+ 2 50.09	− 20.5	15 59 43.41	− 2.55	31 6 57.3	+ 9.5
	6 59.80		− 0.72	− 12.18	340 38 9.98	+ 0 52.95	− 19.8	16 6 46.90	− 2.60	31 45 4.3	+ 9.6
	18 28.05		− 0.73	− 12.18	79 10 11.10	+ 4 3.04	+ 4 47.7	16 18 15.14	− 4.87	130 25 23.0	− 9.0
	37 2.77		− 0.65	− 12.19	52 46 7.55	+ 1 13.74	+ 1 14.4	16 36 49.93	− 3.95	103 54 56.9	− 1.6
	37 25.65		− 0.65	− 12.19	52 46 7.55	+ 1 54.01	+ 1 14.4	16 37 12.81	− 3.96	103 55 37.2	− 1.6
	43 38.17		− 0.73	− 12.19	79 46 9.58	+ 4 2.71	+ 5 4.5	16 43 25.25	− 5.03	131 1 38.0	− 6.0
	46 52.14		− 0.69	− 12.19	69 20 5.12	+ 4 27.32	+ 2 29.3	16 46 39.26	− 4.53	120 33 22.9	− 3.8
	47 12.75		− 0.69	− 12.19	69 20 5.12	+ 2 30.97	+ 2 29.2	16 46 59.87	− 4.53	120 31 26.5	− 3.7
	49 47.33		− 0.70	− 12.19	71 52 10.78	+ 2 53.11	+ 2 51.4	16 49 34.44	− 4.65	123 4 16.5	− 3.9
	52 15.88		− 0.66	− 12.19	53 28 4.78	+ 5 24.32	+ 1 16.4	16 52 3.03	− 4.02	104 41 6.7	− 0.3
	56 13.94		− 0.72	− 12.19	76 26 4.28	+ 4 12.98	+ 3 51.2	16 56 1.03	− 4.89	127 40 29.7	− 3.9
	0 26.93		− 0.69	− 12.20	69 42 6.30	+ 4 2.25	+ 2 32.3	17 0 14.04	− 4.59	120 55 2.1	− 2.3
	1 34.73		− 0.63	− 12.20	16 34 2.00	+ 4 29.31	+ 16.9	17 1 21.90	− 3.34	67 45 9.4	+ 6.6
	6 45.66		− 0.67	− 12.20	62 10 5.90	+ 3 14.69	+ 1 47.2	17 6 32.79	− 4.33	113 21 29.0	− 0.4
	7 52.21		− 0.70	− 12.20	72 12 9.08	+ 3 10.52	+ 2 55.0	17 7 39.31	− 4.72	123 24 35.8	− 1.8
	13 6.93		− 0.63	− 12.20	21 22 4.28	+ 4 20.78	+ 22.3	[illegible] 54.10	− 3.44	72 33 8.6	+ 6.5
	21 15.01		− 0.71	− 12.20	75 26 5.18	+ 4 37.19	+ 3 35.6	[illegible] 2.10	− 4.92	126 40 39.2	− 0.7
10	22 25.60		− 0.69	− 12.20	69 50 6.68	+ 4 7.28	+ 2 33.6	17 22 12.71	− 4.66	121 3 8.8	+ 0.2
	25 39.48		− 0.70	− 12.20	71 44 5.25	+ 4 51.24	+ 2 50.8	17 25 26.58	− 4.75	122 58 8.5	+ 0.3
	27 17.67		− 0.70	− 12.20	71 16 8.50	+ 4 35.17	+ 2 46.2	17 27 4.77	− 4.73	122 29 51.1	+ 0.6
	34 37.51		− 0.72	− 12.20	77 42 6.80	+ 5 16.45	+ 4 15.9	17 34 24.59	− 5.07	128 58 0.3	+ 0.7
	39 38.06		− 0.73	− 12.21	78 50 9.48	+ 3 33.70	+ 4 40.7	17 39 25.12	− 5.14	130 4 45.1	+ 1.2
	42 14.07		− 0.73	− 12.21	78 50 9.48	+ 1 49.04	+ 4 40.0	17 42 1.13	− 5.14	130 2 59.7	+ 1.5
	44 46.97		− 0.70	− 12.21	73 10 6.95	+ 3 21.69	+ 3 6.0	17 44 34.06	− 4.85	124 22 55.8	+ 2.5
	46 54.11		− 0.70	− 12.21	73 10 6.95	+ 6 42.20	+ 3 6.6	17 46 41.20	− 4.85	124 26 17.0	+ 2.7
	52 27.52		− 0.70	− 12.21	72 10 6.40	+ 4 20.23	+ 2 55.3	17 52 14.61	− 4.81	123 23 43.1	+ 3.5
	56 33.28		− 0.64	− 12.21	5 34 3.08	+ 6 9.40	+ 5.6	17 56 20.43	− 3.36	56 46 39.3	+ 9.6
	57 33.03		− 0.64	− 12.21	5 34 3.08	+ 0 34.92	+ 5.6	17 57 20.18	− 3.37	56 41 4.8	+ 9.6
8	1 38.77		− 0.69	− 12.21	69 56 6.95	+ 5 18.32	+ 2 34.9	18 1 25.87	− 4.72	121 10 21.4	+ 4.8
	2 38.80		− 0.70	− 12.21	70 56 5.25	+ 4 23.33	+ 2 43.5	18 2 25.89	− 4.76	122 9 33.3	+ 4.8
	8 50.48		− 0.69	− 12.22	69 58 6.28	+ 4 30.08	+ 2 35.2	18 8 37.57	− 4.72	121 11 32.8	+ 5.6
	13 56.26		− 0.66	− 12.22	55 2 6.85	+ 4 57.96	+ 1 21.4	18 13 43.38	− 4.22	106 14 47.4	+ 7.3
	14 4.21		− 0.66	− 12.22	55 2 6.85	+ 3 46.16	+ 1 21.3	18 13 51.33	− 4.22	106 13 35.5	+ 7.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
9	30.07	67.8	68.5		7	− 2.6	+ 7.6	.	+ 5.0
10	30.10	76.0	77.3		8	− 2.6	− 7.6	+ 0.2	− 10.0
11	30.10	70.0	69.3	ZENITH-POINT CORR.					
30	30.09	68.4	67.3	″					
34	30.09	66.3	65.1	20. One bisection. 1 + 53.15					
				2. Four bisections. 2 to 10 + 52.90					
				11 to 50 + 52.41					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 6, E.	1	B. A. C. 6239	.	9	17 43.99	− 0.69	− 12.22	69 36 3.58	+ 3 48.32	+ 2 32.2	18 17 31.08	− 4.71	120 48 45.3	+ 6.7
	2	B. A. C. 6254	.	9	20 3.03	− 0.70	− 12.22	72 18 6.95	+ 1 11.13	+ 2 56.4	18 19 50.11	− 4.82	123 28 35.7	+ 6.8
	3	Gould Z. C. 1335	8.5	9	22 13.80	− 0.70	− 12.22	72 18 6.95	+ 7 20.55	+ 2 57.5	18 22 0.88	− 4.83	123 34 46.2	+ 7.0
	4	Anonymous	10.8	9	26 46.06	− 0.72	− 12.22	76 46 6.15	+ 1 51.09	+ 3 57.6	18 26 33.12	− 5.04	127 58 16.0	+ 7.3
	5	Tr. Z. 47, 24	8.0	9	27 36.56	− 0.72	− 12.22	76 46 6.15	+ 3 15.52	+ 3 58.0	18 27 23.62	− 5.04	127 59 40.9	+ 7.4
	6	Anonymous	10.0	5	28 7.04	− 0.72	− 12.22	76 46 6.15	+ 1 58.90	+ 3 57.6	18 27 54.10	− 5.04	127 58 23.8	+ 7.5
	7	Antiope	.	9	35 55.53	− 0.68	− 12.23	63 50 6.40	+ 1 59.09	+ 1 55.5	18 35 42.62	. .	115 0 22.2	− 4.9
	8	B. A. C. 6389	.	9	41 38.68	− 0.70	− 12.23	71 36 6.55	+ 4 52.77	+ 2 50.2	18 41 25.75	− 4.78	122 50 10.7	+ 9.3
	9	51 Cephei, S. P.	.	5	44 51.12	+ 2.14	− 12.23	306 4 2.58	+ 4 20.71	− 1 17.9	6 44 41.03	. .	357 13 26.6	− 1.6
	10	Anonymous	10.0	9	49 30.97	− 0.69	− 12.23	67 44 6.62	+ 4 16.38	+ 2 18.7	18 49 18.05	− 4.62	118 57 2.9	+10.3
	11	M. Z. 47, 23	9.0	9	51 4.40	− 0.69	− 12.23	67 44 6.62	+ 1 29.04	+ 2 18.4	18 50 51.48	− 4.61	118 54 15.3	+10.5
	12	D. M. +20°, 4021	8.5	5	56 29.84	− 0.63	− 12.23	18 10 7.60	+ 3 15.72	+ 18.8	18 56 16.98	− 3.60	69 20 3.3	+11.1
	13	B. VI+20°, 4022	6	5	56 34.12	− 0.63	− 12.23	18 10 7.60	+ 2 59.95	+ 18.8	18 56 21.26	− 3.60	69 19 47.6	+11.1
	14	B. A. C. 6511	.	7	58 44.36	− 0.71	− 12.23	76 0 11.12	+ 3 23.62	+ 3 45.3	18 58 31.42	− 4.96	127 13 41.2	+11.2
	15	Pomona	.	9	5 37.83	− 0.65	− 12.23	53 12 8.72	+ 2 43.27	+ 1 16.2	19 5 24.95	. .	104 22 29.4	− 4.5
	16	*d* Sagittarii	.	9	11 0.99	− 0.66	**− 12.23**	57 58 3.80	+ 3 30.87	+ 1 31.1	19 10 48.09	. .	109 9 27.0	− 2.1
	17	B. A. C. 6594	.	9	13 8.42	− 0.70	− 12.24	70 50 10.25	+ 2 32.44	+ 2 42.9	19 12 55.48	− 4.69	122 1 46.8	+12.8
	18	δ Aquilæ	.	9	19 49.61	− 0.64	**− 12.21**	35 56 4.28	+ 3 47.70	+ 41.4	19 19 36.73	. .	87 6 54.6	− 2.7
	19	B. A. C. 6690 (R)	.	.	. . . .	. .	. .	168 46 8.45	+ 3 21.74	− 11.3	. . . .	. .	62 17 2.3	+11.6
	20	B. A. C. 6690	.	.	. . . .	. .	. .	11 8 4.52	+ 2 23.30	+ 11.3	19 26.0	. .	62 17 0.3	+11.6
	21	κ Aquilæ	.	9	30 49.53	− 0.64	**− 12.34**	46 6 6.18	+ 3 37.15	+ 59.4	19 30 36.65	. .	97 17 3.9	− 1.4
	22	B. A. C. 6753	.	9	38 13.48	− 0.69	− 12.25	69 58 7.62	+ 3 42.66	+ 2 35.8	19 37 0.54	− 4.59	121 10 47.3	+15.4
	23	γ Aquilæ	.	9	40 55.53	− 0.63	**− 12.19**	28 30 7.20	+ 3 9.07	+ 31.1	19 40 42.65	. .	79 40 8.6	− 2.3
	24	λ Ursæ Minoris	.	5	42 54.70	− 7.35	− 12.25	309 54 4.00	+ 3 39.98	− 1 8.1	19 42 35.10	. .	1 2 57.1	− 1.0
	25	Juno	.	9	52 31.09	− 0.64	− 12.25	42 56 6.82	+ 1 57.69	+ 53.2	19 52 18.20	. .	94 5 18.9	− 3.1
S.	26	α Tauri	.	9	29 23.64	− 0.75	**− 12.14**	22 34 7.28	+ 2 51.53	+ 23.2	4 29 10.67	. .	73 43 43.2	− 2.1
	27	ι Aurigæ	.	9	49 33.46	− 0.72	**− 12.23**	5 52 9.20	+ 2 45.70	+ 5.7	4 49 20.52	. .	57 1 21.8	− 2.5
	28	α Aurigæ	.	9	8 13.31	− 0.70	**− 12.24**	352 58 6.80	+ 3 8.68	− 6.8	5 8 0.39	. .	44 7 29.9	− 2.8
	29	β Orionis	.	9	9 6.23	− 0.81	**− 12.26**	47 10 9.38	+ 2 45.03	+ 59.8	5 8 53.20	. .	98 20 15.4	− 3.6
	30	β Tauri	.	9	19 4.70	− 0.72	**− 12.25**	10 20 5.45	+ 3 1.50	+ 10.1	5 18 51.76	. .	61 29 38.3	− 3.9
7	31	Sun I, N.	.	9	5 58.08	− 0.73	− 12.22	16 0 2.85	+ 3 51.21	+ 15.9	7 5 45.13	+68.42	67 10 31.2	. .
9, W.	32	ξ^1 Ceti	.	.	. . . .	. .	. .	30 32 3.82	+ 3 15.29	+ 32.7	2 6.8	. .	81 42 13.0	− 3.1
	33	δ Ceti	.	9	33 43.67	− 0.67	− 14.82	39 0 11.52	+ 3 19.58	+ 44.8	2 33 28.18	− 2.04	90 10 37.1	+12.2
	34	γ^2 Ceti	.	9	37 28.79	− 0.68	**− 14.84**	36 4 4.62	+ 4 24.41	+ 40.3	2 37 13.29	. .	87 15 30.5	− 2.8
	35	β Ursæ Min., S. P.	.	9	51 18.99	+ 0.71	− 14.83	293 30 5.98	+ 4 2.86	− 2 5.4	14 51 4.87	. .	344 38 24.6	− 1.0
	36	α Ceti	.	9	56 24.18	− 0.68	**− 14.81**	35 12 9.32	+ 3 4.64	+ 38.9	2 56 8.67	. .	86 22 14.1	− 3.1
	37	β Persei	.	9	0 48.03	− 0.83	− 14.84	358 20 12.98	+ 3 26.89	− 1.5	3 0 32.36	− 2.58	49 29 59.6	− 1.8
	38	Moon II, N.	.	9	17 37.02	− 0.72	− 14.85	20 6 6.80	+ 3 0.03	+ 20.2	3 17 21.45	−69.09	71 15 47.2	. .
	39	δ Persei	.	.	. . . .	. .	. .	351 26 7.68	+ 3 11.15	− 8.2	3 34.6	. .	42 35 31.8	− 1.4
	40	η Tauri	.	9	40 45.98	− 0.74	**− 14.86**	15 6 6.18	+ 2 53.22	+ 14.9	3 40 30.38	. .	66 15 35.5	− 3.0
	41	ζ Persei	.	9	47 0.84	− 0.77	**− 14.87**	7 18 10.00	+ 3 26.61	+ 7.1	3 46 45.20	. .	58 28 4.9	− 1.9
E.	42	γ Tauri	.	9	13 22.13	− 0.70	**− 14.84**	23 30 12.45	+ 2 28.78	+ 23.8	4 13 6.59	. .	74 39 26.2	− 3.1
	43	ε Tauri	.	9	22 1.06	− 0.73	**− 14.84**	19 54 3.12	+ 4 9.48	+ 19.9	4 21 45.48	. .	71 4 53.7	− 3.7
	44	α Tauri	.	9	29 26.39	− 0.71	**− 14.86**	22 34 5.45	+ 2 52.21	+ 22.7	4 29 10.83	. .	73 43 41.6	− 3.4
	45	ι Aurigæ	.	9	49 36.32	− 0.85	**− 14.88**	5 52 9.65	+ 2 44.07	+ 5.6	4 49 20.60	. .	57 1 20.5	− 3.8
	46	α Aurigæ	.	9	8 16.31	− 1.03	**− 14.82**	352 58 7.18	+ 3 8.43	− 6.7	5 8 0.39	. .	44 7 30.1	− 2.9
	47	β Orionis	.	9	9 8.73	− 0.58	**− 14.93**	47 10 10.20	+ 2 44.55	+ 58.8	5 8 53.26	. .	98 20 14.8	− 3.6
10	48	Sun I, S.	.	9	18 17.74	− 0.76	− 15.01	16 52 8.85	+ 4 39.44	+ 16.4	7 18 1.87	+68.33	68 3 25.9	. .
	49	Sun II, N.	.	9	20 34.30	− 0.76	− 15.01	16 20 10.80	+ 5 6.55	+ 15.9	7 20 18.53	−68.33	67 31 54.5	. .
	50	Venus I, N.	.	9	45 18.70	− 0.70	− 15.15	23 30 9.48	+ 4 52.13	+ 23.4	9 45 2.85	+ 0.47	74 41 46.2	. .

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
6	30.10	65.3	63.3		ZENITH-POINT CORR.	31	− 2.4	+ 15 44.6	.	+ 15 42.2
24	30.09	63.5	61.3			38	− 19 38.4	+ 15 43.2	.	− 3 55.2
26	30.15	71.8	76.2		″	48	− 2.5	− 15 45.6	.	− 15 48.1
30	30.15	75.1	79.2	5, 6. One bisection.	1 to 25 + 52.41	49	− 2.4	+ 15 45.7	.	+ 15 43.3
31	30.15	76.9	81.4	38. Three bisections.	26 to 31 + 52.52	50	− 2.8	+ 6.8	.	+ 4.0
32	30.06	75.5	76.8		32 to 41 + 50.90					
41	30.06	79.2	81.8		42 to 50 + 49.52					
42	30.06	81.0	83.5							
49	30.04	87.8	90.8							

Date and Obs'n.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 10, 12.	1	α Leonis . . .	.	9	2 22.64	− 0.69	**− 15.14**	26 18 7.75	+ 2 37.49	+ 26.5	10 2 6.79	. .	77 27 32.9	− 2.6
	2	γ¹ Leonis . . .	.	9	13 45.51	− 0.74	**− 15.19**	18 24 9.42	+ 3 3.27	+ 17.9	10 13 29.60	. .	69 33 51.8	− 1.6
	3	μ¹ Bootis . . .	.	9	20 20.99	− 0.84	**− 15.52**	1 2 5.45	+ 3 54.51	+ 1.0	15 20 4.69	. .	52 12 22.2	− 1.8
	4	α Cor. Bor. . .	.	9	30 0.60	− 0.74	**− 15.44**	11 42 10.05	+ 4 27.03	+ 11.4	15 29 44.39	. .	62 53 9.7	− 1.2
	5	M. Z. 259, 15 .	.	9	31 44.53	− 0.48	− 15.47	59 26 2.08	+ 3 42.28	+ 1 32.3	15 31 28.58	− 3.80	110 37 37.9	− 9.1
	6	α Serpentis. . .	.	9	38 46.70	− 0.60	**− 15.46**	32 2 1.55	+ 3 8.96	+ 34.2	15 38 30.62	. .	83 12 5.9	− 3.1
	7	ε Serpentis. . .	.	9	45 15.49	− 0.59	**− 15.50**	34 0 3.22	+ 2 55.09	+ 36.9	15 44 59.41	. .	85 9 56.4	− 2.4
	8	ζ Ursæ Minoris .	.	9	48 37.81	− 2.76	− 15.49	320 42 0.32	+ 2 45.65	− 44.6	15 48 19.56	. .	11 50 22.6	− 1.6
	9	ε Cor. Bor. . .	.	8	53 1.39	− 0.74	**− 15.47**	11 36 7.15	+ 4 0.16	+ 11.3	15 52 45.16	. .	62 46 39.8	− 1.9
	10	B. A. C. 5348 (R)	.	.	. . . .	. .	. .	199 56 3.12	+ 2 59.91	+ 19.9	. . . .	. .	31 6 58.3	+10.5
	11	B. A. C. 5348 .	.	5	0 0.07	− 1.23	− 15.50	339 57 59.52	+ 2 55.26	− 19.9	15 59 43.34	− 2.44	31 6 56.1	+10.5
	12	φ Herculis . . .	.	9	5 22.47	− 0.94	− 15.50	353 36 3.65	+ 2 49.65	− 6.1	16 5 6.03	− 2.73	44 45 8.4	+ 9.0
	13	σ¹ Cor. Bor. . .	8	6	10 34.73	− 0.80	− 15.51	4 40 6.40	+ 3 52.08	+ 4.5	16 10 18.42	− 2.93	55 50 24.2	+ 7.3
	14	σ² Cor. Bor. . .	7	5	10 34.99	− 0.80	− 15.51	4 40 6.40	+ 3 48.54	+ 4.5	16 10 18.68	− 2.93	55 50 20.6	+ 7.3
	15	Gould Z. C. 1157	.	9	17 19.74	− 0.40	− 15.51	79 10 7.75	+ 1 11.41	+ 4 37.3	16 17 3.83	− 4.83	130 22 17.7	− 9.3
	16	Gould Z. C. 1206	.	5	18 0.45	− 0.40	− 15.52	79 10 7.75	+ 3 25.22	+ 4 38.2	16 17 44.53	− 4.83	130 24 32.4	− 9.2
	17	Gould Z. C. 1244	.	5	18 30.95	− 0.40	− 15.52	79 10 7.75	+ 4 18.87	+ 4 38.6	16 18 15.03	− 4.84	130 25 26.4	− 9.2
	18	Anonymous . .	10	9	37 5.93	− 0.51	− 15.53	52 46 5.60	+ 1 17.01	+ 1 12.0	16 36 49.89	− 3.93	103 54 55.8	− 1.3
	19	Anonymous . .	8	8	37 28.89	− 0.51	− 15.53	52 46 5.60	+ 1 55.54	+ 1 12.0	16 37 12.85	− 3.94	103 55 34.3	− 1.3
	20	B. A. C. 5629 .	.	9	40 53.36	− 1.15	− 15.54	342 56 1.60	+ 3 14.63	− 16.8	16 40 36.67	− 2.75	34 5 20.6	+11.0
	21	Herschel IV, 50.	.	9	43 59.81	− 0.98	− 15.54	351 6 1.28	+ 3 19.62	− 8.5	16 43 43.29	− 2.89	42 15 33.6	+10.3
	22	B. A. C. 5653 .	.	9	45 51.28	− 0.44	− 15.54	70 28 3.28	+ 3 53.85	+ 2 33.6	16 45 35.30	− 4.55	121 40 51.9	− 4.2
	23	Piazzi 218 . .	.	9	48 44.22	− 0.41	− 15.54	79 22 8.00	+ 4 50.16	+ 4 44.6	16 48 28.27	− 5.00	130 38 4.0	− 5.6
	24	Piazzi 244 . .	6.5	9	52 18.99	− 0.50	− 15.55	53 28 3.90	+ 5 31.34	+ 1 14.1	16 52 2.94	− 4.01	104 41 10.5	0.0
	25	Anonymous . .	10.8	8	53 42.01	− 0.50	− 15.55	53 28 3.90	+ 3 50.99	+ 1 14.1	16 53 25.96	− 4.01	104 39 30.2	+ 0.1
	26	B. A. C. 5729 .	.	3	56 16.82	− 0.42	− 15.55	76 26 7.68	+ 4 19.17	+ 3 43.9	16 56 0.85	− 4.88	127 40 31.9	− 4.1
	27	B. A. C. 5762 .	.	9	0 29.91	− 0.44	− 15.55	69 42 10.20	+ 4 3.92	+ 2 27.6	17 0 13.92	− 4.58	120 55 2.9	− 2.4
	28	Weisse (2) 1844	.	8	1 38.10	− 0.70	− 15.55	16 34 4.00	+ 4 27.25	+ 16.4	17 1 21.85	− 3.31	67 45 8.8	+ 7.5
	29	B. A. C. 5807 .	.	9	8 26.00	− 0.43	− 15.56	72 22 4.15	+ 4 44.10	+ 2 51.4	17 8 10.01	− 4.72	123 36 0.8	− 1.9
	30	B. A. C. 5818 .	.	9	9 42.03	− 0.44	− 15.56	69 0 4.72	+ 4 15.41	+ 2 22.3	17 9 26.03	− 4.58	120 13 3.6	− 1.2
	31	B. VI+53°, 1937	.	9	19 32.12	− 1.09	− 15.57	345 18 12.20	+ 3 29.79	− 14.3	17 19 15.46	− 3.00	36 27 48.9	+11.5
	32	D. M. −0°, 3298	.	9	24 19.90	− 0.56	− 15.57	39 46 4.10	+ 3 18.58	+ 45.8	17 24 3.57	− 3.78	90 56 29.7	+ 5.2
	33	B. A. C. 5910 .	.	8	24 39.30	− 0.56	− 15.57	39 46 4.10	+ 4 31.60	+ 45.8	17 24 23.17	− 3.78	90 57 42.7	+ 5.2
	34	Weisse (2) 813 .	.	9	28 34.86	− 0.68	− 15.58	19 28 2.68	+ 4 30.94	+ 19.5	17 28 18.60	− 3.44	70 39 14.3	+ 8.4
	35	B. A. C. 5970 .	.	9	34 40.60	− 0.41	− 15.58	77 42 8.92	+ 5 25.27	+ 4 7.5	17 34 24.61	− 5.06	128 58 2.9	+ 0.5
	36	B. A. C. 5980 .	.	9	36 12.70	− 0.43	− 15.58	71 22 9.80	+ 5 1.44	+ 2 42.0	17 35 56.69	− 4.75	122 36 14.4	+ 1.5
	37	B. A. C. 6004 .	.	9	39 41.10	− 0.41	− 15.59	78 50 7.62	+ 3 45.23	+ 4 31.4	17 39 25.10	− 5.14	130 4 45.4	+ 0.9
	38	B. A. C. 6019 .	.	9	42 17.07	− 0.41	− 15.59	78 50 7.62	+ 2 0.20	+ 4 30.8	17 42 1.07	− 5.14	130 2 59.8	+ 1.3
	39	B. A. C. 6031 .	.	9	44 50.11	− 0.43	− 15.59	73 10 3.82	+ 3 33.58	+ 2 59.9	17 44 34.09	− 4.85	124 22 58.5	+ 2.3
	40	B. A. C. 6046 .	.	9	46 57.13	− 0.43	− 15.59	73 10 3.82	+ 6 55.20	+ 3 0.5	17 46 41.11	− 4.85	124 26 20.7	+ 2.6
	41	B. A. C. 6058 .	.	9	49 27.03	− 0.43	− 15.60	71 26 4.85	+ 4 55.13	+ 2 42.6	17 49 11.00	− 4.78	122 40 3.8	+ 3.1
	42	B. A. C. 6076 .	.	9	52 30.57	− 0.43	− 15.60	72 10 6.80	+ 4 26.50	+ 2 49.6	17 52 14.54	− 4.81	123 23 44.1	+ 3.4
	43	B. A. C. 6095 .	.	9	54 43.21	− 0.91	− 15.60	355 24 2.82	+ 3 46.36	− 4.4	17 54 26.70	− 3.26	46 34 6.0	+11.4
	44	B. A. C. 6131 .	8	9	1 41.79	− 0.44	− 15.60	69 56 4.35	+ 5 26.49	+ 2 29.8	18 1 25.75	− 4.73	121 10 21.8	+ 4.7
	45	B. A. C. 6144 .	.	9	2 41.89	− 0.43	− 15.61	70 56 . .	. . .	. .	18 2 25.85	− 4.77	122 10 . .	. .
	46	B. A. C. 6166 .	.	9	6 17.07	− 0.44	− 15.61	70 46 2.70	+ 4 35.38	+ 2 36.7	18 6 1.02	− 4.77	121 59 36.0	+ 5.2
	47	B. A. C. 6182 .	.	9	9 0.89	− 0.44	− 15.61	70 8 5.15	+ 4 18.92	+ 2 31.4	18 8 44.84	− 4.74	121 21 16.7	+ 5.5
	48	B. A. C. 6188 .	.	8	9 58.30	− 0.44	− 15.61	70 8 5.15	+ 3 5.32	+ 2 31.2	18 9 42.25	− 4.74	121 20 2.9	+ 5.7
	49	XVIII, 8 . .	8.2	9	12 32.48	− 0.41	− 15.62	79 4 5.98	+ 4 0.09	+ 4 37.6	18 12 16.45	− 5.19	130 19 4.9	+ 5.1
	50	Anonymous . .	9.5	9	15 26.65	− 0.49	− 15.62	56 2 4.88	+ 4 13.50	+ 1 21.7	18 15 10.54	− 4.26	107 14 1.3	+ 7.6

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
2	30.00	90.0	93.0
3	29.96	84.0	83.0
29	29.95	81.2	79.2

For summary of the constants of reduction see page 3.

15, 16, 17, 25. One bisection.

ZENITH-POINT CORR.

″

1 to 2 + 49.52

3 to 50 + 50.17

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 10, E.	1	B. A. C. 6244		9	18 35.59	− 0.44	− 15.62	70 36 2.02	+ 3 57.64	+ 2 35.2	18 18 19.53	− 4.77	121 48 56.1	+ 6.6
	2	B. A. C. 6254		9	20 6.10	− 0.43	− 15.62	72 18 4.18	+ 1 20.03	+ 2 50.5	18 19 50.05	− 4.84	123 28 35.9	+ 6.6
	3	B. A. C. 6274		9	22 36.37	− 0.43	− 15.63	72 18 4.18	+ 6 48.16	+ 2 51.4	18 22 20.31	− 4.84	123 34 4.9	+ 6.9
	4	Anonymous		9	26 49.19	− 0.41	− 15.63	76 46 3.48	+ 2 6.00	+ 3 49.5	18 26 33.15	− 5.06	127 58 20.2	+ 7.1
	5	Tr. Z. 47, 24		9	27 39.69	− 0.41	− 15.63	76 46 3.48	+ 3 28.45	+ 3 49.9	18 27 23.65	− 5.06	127 59 43.0	+ 7.2
	6	Anonymous		8	28 10.16	− 0.41	− 15.63	76 46 3.48	+ 2 13.82	+ 3 49.5	18 27 54.12	− 5.06	127 58 28.0	+ 7.2
	7	Antiope		9	32 40.65	− 0.46	− 15.63	63 56 1.28	+ 1 34.72	+ 1 52.0	18 32 24.56	. .	115 5 49.2	− 4.8
	8	B. A. C. 6359		9	36 2.41	− 0.41	− 15.64	77 12 8.45	+ 3 32.69	+ 3 57.8	18 35 46.36	− 5.08	128 26 0.1	+ 8.2
	9	51 Cephei, S. P.		8	44 47.28	+10.04	− 15.64	306 4 3.88	+ 4 16.51	− 1 15.2	6 44 41.68	. .	357 13 26.4	− 0.5
	10	B. A. C. 6435		9	47 44.09	− 0.42	− 15.65	76 16 1.82	+ 5 42.69	+ 3 42.2	18 47 28.02	− 5.02	127 31 47.9	+ 9.6
	11	B. A. C. 6444		9	49 1.32	− 0.42	− 15.65	76 16 1.82	+ 3 18.24	+ 3 41.6	18 48 45.25	− 5.02	127 29 22.9	+ 9.8
	12	B. A. C. 6458		9	51 6.83	− 0.42	− 15.65	76 0 10.75	+ 5 14.16	+ 3 37.9	18 50 50.76	− 5.00	127 15 24.0	+10.0
	13	B. A. C. 6511		9	58 47.42	− 0.42	− 15.65	76 0 10.75	+ 3 32.10	+ 3 37.6	18 58 31.35	− 4.99	127 13 41.7	+11.0
	14	ζ Aquilæ		9	0 19.20	− 0.64	**− 15.64**	25 8 3.55	+ 3 34.88	+ 25.9	19 0 2.90	. .	76 18 25.5	− 1.8
	15	Pomona		5	1 56.54	− 0.50	− 15.66	53 16 3.50	+ 1 55.67	+ 1 13.7	19 1 40.38	. .	104 25 34.1	− 4.5
	16	*d* Sagittarii		9	11 4.31	− 0.48	**− 15.69**	57 58 8.92	+ 3 28.48	+ 1 28.0	19 10 48.16	. .	109 9 26.6	− 2.3
	17	B. A. C. 6594		9	13 11.62	− 0.44	− 15.67	70 50 7.90	+ 2 40.70	+ 2 37.3	19 12 55.51	− 4.73	122 1 47.1	+12.7
	18	δ Aquilæ		9	19 53.04	− 0.58	**− 15.66**	35 56 4.08	+ 3 49.05	+ 40.0	19 19 36.78	. .	87 6 54.3	− 2.4
	19	B. A. C. 6690 (R)		.	. . . .	. .	. .	168 46 9.22	+ 3 21.65	− 10.9	. . . .	. .	62 17 1.2	+12.8
	20	B. A. C. 6690		.	. . . .	. .	. .	11 8 4.18	+ 2 22.28	+ 10.9	19 26.0	. .	62 16 58.6	+12.8
	21	κ Aquilæ		9	30 52.82	− 0.53	**− 15.70**	46 6 5.48	+ 3 38.65	+ 57.3	19 30 36.61	. .	97 17 2.6	− 2.3
	22	B. A. C. 6753		9	38 16.64	− 0.44	− 15.69	69 58 3.90	+ 3 52.20	+ 2 30.3	19 38 0.51	− 4.64	121 10 47.6	+15.4
	23	λ Ursæ Minoris		4	43 19.15	−27.78	− 15.70	309 54 2.82	+ 3 36.06	− 1 5.7	19 42 35.67	. .	1 2 54.4	− 2.3
	24	Juno		9	49 15.42	− 0.55	− 15.70	43 6 10.62	+ 2 45.71	+ 51.7	19 48 59.17	. .	94 16 9.2	− 3.2
11, S.	25	η Herculis		9	39 11.87	− 0.81	**− 17.04**	359 40 8.92	+ 4 28.40	− 0.2	16 38 54.05	. .	50 50 58.3	− 1.9
	26	B. A. C. 5639		9	44 38.21	− 0.07	− 17.01	79 16 4.25	+ 4 10.27	+ 4 42.9	16 44 21.13	− 4.98	130 31 18.6	− 6.1
	27	XVI, 23	8	9	55 20.11	− 0.11	− 17.03	75 28 2.85	+ 3 27.46	+ 3 29.6	16 55 2.97	− 4.82	126 41 21.1	− 4.1
	28	Weisse (2) 1844		9	1 39.44	− 0.58	− 17.04	16 34 1.20	+ 4 29.59	+ 16.5	17 1 21.82	− 3.31	67 45 8.5	+ 7.7
	29	B. A. C. 5807		9	8 27.27	− 0.13	− 17.05	72 24 3.25	+ 2 44.96	+ 2 52.1	17 8 10.09	− 4.72	123 36 1.5	− 1.9
	30	Weisse 143		9	10 53.67	− 0.40	− 17.05	37 27 58.10	+ 4 15.19	+ 42.3	17 10 36.22	− 3.70	88 39 16.8	+ 4.7
	31	*b* Ophiuchi		9	19 31.53	− 0.20	**− 17.07**	62 52 3.75	+ 3 38.34	+ 1 47.4	17 19 14.27	. .	114 3 50.7	− 3.4
	32	B. A. C. 5914		9	25 43.76	− 0.14	− 17.07	71 44 2.98	+ 4 57.95	+ 2 46.1	17 25 26.55	− 4.75	122 58 8.2	+ 0.2
	33	Weisse (2) 813		9	28 36.19	− 0.56	− 17.07	19 27 57.15	+ 4 35.19	+ 19.6	17 28 18.56	− 3.44	70 39 13.1	+ 8.6
	34	Weisse (2) 1334		9	42 19.08	− 0.80	− 17.09	359 53 55.82	+ 3 48.08	0.0	17 42 1.19	− 3.24	51 4 5.1	+11.2
	35	Weisse (2) 1438		9	46 9.46	− 0.67	− 17.09	9 28 5.72	+ 3 55.19	+ 9.3	17 45 51.70	− 3.36	60 38 31.4	+10.5
	36	B. A. C. 6058		9	49 28.11	− 0.14	− 17.10	71 26 9.32	+ 4 48.45	+ 2 43.4	17 49 10.87	− 4.78	122 40 2.4	+ 3.1
	37	B. A. C. 6095		9	54 44.51	− 0.89	− 17.10	355 24 3.48	+ 3 44.29	− 4.4	17 54 26.52	− 3.25	46 34 4.6	+11.7
	38	γ^2 Sagittarii		9	58 35.60	− 0.16	**− 17.06**	69 12 2.65	+ 4 30.95	+ 2 24.7	17 58 18.34	. .	120 25 19.5	− 2.5
	39	B. A. C. 6150 (R)		.	. . . .	. .	. .	169 48 5.42	+ 3 26.49	− 9.9	. . . .	. .	61 14 59.2	+11.0
	40	B. A. C. 6150		.	. . . .	. .	. .	10 6 9.90	+ 2 15.55	+ 9.9	18 3.0	. .	61 14 56.5	+11.0
	41	B. A. C. 6182		9	9 2.17	− 0.15	− 17.12	70 8 7.80	+ 4 11.86	+ 2 32.1	18 8 44.90	− 4.75	121 21 13.0	+ 5.5
	42	B. A. C. 6188		9	9 59.70	− 0.15	− 17.12	70 8 7.80	+ 2 56.96	+ 2 32.0	18 9 42.43	− 4.75	121 19 58.0	+ 5.6
	43	XVIII, 9	7.5	9	13 6.30	− 0.21	− 17.13	62 10 4.55	+ 3 23.23	+ 1 44.5	18 12 48.96	− 4.45	113 21 33.5	+ 6.8
	44	B. A. C. 6226		9	15 53.04	− 0.11	− 17.13	75 4 5.45	+ 3 39.64	+ 3 24.6	18 15 35.80	− 4.98	126 17 30.9	+ 5.8
	45	B. A. C. 6244		9	18 36.82	− 0.14	− 17.13	70 36 8.80	+ 3 49.93	+ 2 36.1	18 18 19.55	− 4.78	121 48 56.0	+ 6.6
	46	B. A. C. 6275		5	22 38.83	− 0.14	− 17.14	71 50 11.88	+ 7 49.28	+ 2 47.9	18 22 21.55	− 4.83	123 7 10.3	+ 7.0
	47	B. A. C. 6285		5	23 42.43	− 0.14	− 17.14	71 50 11.88	+ 4 25.01	+ 2 47.4	18 23 25.15	− 4.83	123 3 45.5	+ 7.1
	48	Piazzi 87		5	25 1.37	− 0.14	− 17.14	71 50 11.88	+ 1 43.93	+ 2 47.0	18 24 44.09	− 4.83	123 1 4.0	+ 7.2
	49	B. A. C. 6305		9	26 35.36	− 0.14	− 17.14	71 50 11.88	+ 6 38.69	+ 2 47.8	18 26 18.08	− 4.83	123 5 59.6	+ 7.4
	50	B. A. C. 6308		7	26 42.88	− 0.14	− 17.14	71 50 11.88	+ 3 22.45	+ 2 47.3	18 26 25.60	− 4.83	123 2 42.8	+ 7.4

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
24	29.92	78.4	76.3	ZENITH-POINT CORR.					
26	29.96	79.4	77.8	″					
				6, 15. One bisection. 1 to 24 + 50.17					
				9. Three bisections. 25 to 50 + 50.51					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
July					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
11, S.	1	B. A. C. 6317		9	28 4.71	− 0.14	− 17.15	71 50 11.88	− 0 38.61	+ 2 46.6	18 27 47.42	− 4.83	122 58 41.1	+ 7.6
	2	B. A. C. 6344		9	32 8.39	− 0.14	− 17.15	71 50 11.88	+ 6 14.20	+ 2 47.8	18 31 51.10	− 4.84	123 5 35.1	+ 8.1
	3	B. A. C. 6364		9	36 6.16	− 0.84	− 17.16	358 0 7.60	+ 3 39.47	− 1.9	18 35 48.16	− 3.42	49 10 6.4	+12.2
	4	B. A. C. 6417		5	39 20.28	− 5.79	− 17.16	315 34 3.78	+ 3 30.41	− 54.1	18 38 57.33	− 5.19	6 43 1.3	+11.5
	5	51 Cephei, S. P.		5	44 45.32	+13.44	− 17.17	306 4 1.30	+ 4 19.30	− 1 15.7	6 44 41.59	. .	357 13 26.1	− 0.5
	6	Anonymous	10	9	49 35.27	− 0.17	− 17.17	67 44 5.55	+ 4 20.92	+ 2 14.7	18 49 17.93	− 4.66	118 57 2.4	+10.3
	7	M. Z. 47, 23		9	51 8.93	− 0.17	− 17.18	67 44 5.55	+ 1 32.97	+ 2 14.5	18 50 51.58	− 4.65	118 54 14.2	+10.5
	8	O. Arg. N. 18836		8	56 16.60	− 1.64	− 17.18	333 44 1.65	+ 3 52.73	− 27.3	18 55 57.78	− 3.62	24 53 48.3	+11.8
	9	B. A. C. 6520		7	58 27.61	− 0.96	− 17.18	352 4 6.28	+ 3 21.54	− 7.7	18 58 9.47	− 3.48	43 13 41.3	+12.3
	10	B. A. C. 6535		9	1 48.99	− 0.09	− 17.19	76 52 10.60	+ 2 34.48	+ 3 53.1	19 1 31.71	− 5.04	128 4 59.4	+11.2
	11	*d* Sagittarii		9	11 5.63	− 0.24	**− 17.24**	57 58 6.80	+ 3 29.20	+ 1 28.6	19 10 48.19	. .	109 9 25.8	− 3.1
	12	Lalande 36409		9	13 39.73	− 0.81	− 17.20	359 54 5.38	+ 4 43.23	0.0	19 13 21.72	− 3.54	51 5 9.8	+12.5
	13	δ Aquilæ		9	19 54.44	− 0.41	**− 17.22**	35 56 4.98	+ 3 45.95	+ 40.3	19 19 36.82	. .	87 6 52.4	− 4.1
	14	κ Aquilæ		9	30 54.22	− 0.33	**− 17.29**	46 6 6.52	+ 3 36.14	+ 57.7	19 30 36.67	. .	97 17 1.6	− 3.2
	15	δ Cygni (R)		.	. . . .	. .	. .	185 54 4.38	+ 2 59.44	+ 5.8	. . . .	. .	45 9 11.6	+12.3
	16	δ Cygni		8	41 39.01	− 0.92	− 17.24	354 0 13.20	+ 2 40.30	− 5.8	19 41 20.85	− 3.61	45 9 8.9	+12.3
	17	α Aquilæ		9	45 22.99	− 0.45	**− 17.17**	30 16 8.60	+ 3 12.41	+ 32.5	19 45 5.30	. .	81 26 14.7	− 3.2
	18	β Aquilæ		9	49 52.48	− 0.43	**− 17.20**	32 42 9.75	+ 3 48.47	+ 35.7	19 49 34.80	. .	83 52 55.1	− 3.7
R.	19	α Aurigæ		8	8 19.08	− 1.02	**− 17.54**	352 58 6.12	+ 3 11.77	− 6.7	5 8 0.53	. .	44 7 32.4	− 0.8
	20	β Orionis		9	9 11.26	− 0.49	**− 17.51**	47 10 11.15	+ 2 44.17	+ 58.8	5 8 53.24	. .	98 20 15.3	− 2.8
	21	β Tauri		9	19 10.18	− 0.77	**− 17.56**	10 20 8.88	+ 3 0.22	+ 10.0	5 18 51.87	. .	61 29 40.3	− 1.9
	22	δ Orionis		9	26 18.21	− 0.54	**− 17.61**	39 12 6.85	+ 4 0.53	+ 44.5	5 26 0.12	. .	90 23 13.1	− 2.7
	23	α Columbæ		3	35 40.77	− 0.34	**− 17.49**	72 56 . .	. . .	. .	5 35 22.87	. .	124 8 . .	. .
	24	α Orionis		9	49 6.63	− 0.59	**− 17.57**	31 26 4.75	+ 4 0.31	+ 33.3	5 48 48.47	. .	82 36 59.6	− 1.7
12	25	Sun I, N.		9	26 29.69	− 0.70	− 17.66	16 38 11.45	+ 3 18.24	+ 16.2	7 26 11.33	+68.13	67 48 7.1	. .
	26	Sun II, S.		9	28 45.95	− 0.70	− 17.66	17 10 5.10	+ 2 54.57	+ 16.7	7 28 27.59	−68.13	68 19 37.6	. .
	27	α Hydræ		8	22 6.94	− 0.49	**− 17.77**	46 58 5.48	+ 3 40.37	+ 57.8	9 21 48.68	. .	98 9 4.8	− 2.5
	28	γ¹ Leonis		9	13 48.08	− 0.69	**− 17.82**	18 23 58.25	+ 3 13.96	+ 18.0	10 13 29.57	. .	69 33 51.4	− 2.1
W.	29	ι Aurigæ		9	49 40.56	− 0.73	**− 19.15**	5 52 13.32	+ 2 40.74	+ 5.7	4 49 20.70	. .	57 1 21.0	− 3.3
	30	α Aurigæ		9	8 20.77	− 0.88	− 19.13	352 58 9.55	+ 3 5.99	− 6.7	5 8 0.76	. .	44 7 30.0	− 3.2
	31	β Orionis		9	9 13.00	− 0.49	− 19.13	47 10 11.02	+ 2 43.34	+ 59.3	5 8 53.38	. .	98 20 14.9	− 3.0
	32	β Tauri		9	19 11.68	− 0.69	**− 19.12**	10 20 15.58	+ 2 52.64	+ 10.1	5 18 51.86	. .	61 29 39.5	− 2.7
	33	δ Orionis		9	26 19.73	− 0.53	**− 19.12**	39 12 . .	. . .	. .	5 26 0.07	. .	90 23 . .	. .
	34	α Leporis		9	27 52.09	− 0.46	**− 19.11**	56 42 8.52	+ 4 28.69	+ 1 23.6	5 27 32.50	. .	107 54 22.0	− 3.4
	35	ε Orionis		6	30 34.60	− 0.52	**− 19.17**	40 6 13.20	+ 3 19.26	+ 46.3	5 30 14.95	. .	91 16 40.0	− 2.7
	36	Moon II.		9	10 35.96	− 0.63	− 19.13	18 30 . .	. . .	. .	6 10 16.20	−67.86	69 23 . .	. .
13	37	Sun I, N.		9	30 35.42	− 0.64	− 19.13	16 46 4.65	+ 4 2.78	+ 16.5	7 30 15.65	+67.98	67 56 45.1	. .
	38	Sun II, S.		9	32 51.39	− 0.64	− 19.13	17 18 5.20	+ 3 33.84	+ 17.1	7 32 31.62	−67.99	68 28 17.3	. .
14, S.	39	ι Aurigæ		9	49 41.82	− 0.67	**− 20.42**	5 52 2.48	+ 2 52.47	+ 5.8	4 49 20.72	. .	57 1 22.0	− 2.3
	40	α Aurigæ		9	8 21.87	− 0.77	**− 20.48**	352 58 5.75	+ 3 10.65	− 6.8	5 8 0.66	. .	44 7 30.8	− 2.6
	41	β Tauri		9	19 12.99	− 0.65	**− 20.42**	10 20 1.90	+ 3 6.20	+ 10.2	5 18 51.89	. .	61 29 39.5	− 2.7
	42	δ Orionis		9	26 21.18	− 0.56	**− 20.49**	39 12 3.78	+ 4 1.16	+ 45.6	5 26 0.17	. .	90 23 11.7	− 3.7
	43	α Orionis		9	49 9.53	− 0.58	**− 20.43**	31 25 58.98	+ 4 4.36	+ 34.2	5 48 48.48	. .	82 36 58.7	− 2.4
15	44	Sun I, N.		9	38 43.20	− 0.62	− 20.53	17 4 1.58	+ 4 33.96	+ 17.1	7 38 22.05	+67.88	68 15 13.8	. .
	45	Sun II, S.		9	40 58.97	− 0.62	− 20.53	17 36 2.35	+ 4 2.35	+ 17.6	7 40 37.82	−67.89	68 46 43.5	. .
	46	α Leonis		9	2 28.00	− 0.59	**− 20.61**	26 18 2.50	+ 2 43.31	+ 27.3	10 2 6.80	. .	77 27 34.3	− 1.1
	47	Venus I, S.		9	8 7.17	− 0.59	− 20.61	25 38 0.08	+ 4 44.56	+ 26.5	10 7 45.97	+ 0.48	76 49 32.3	. .
	48	Venus N.		.	. . . .	. .	. .	25 38 0.08	+ 4 29.90	+ 26.5	. . . .	. .	75 49 17.7	. .
	49	M. Z. 259, 15	6	9	31 49.74	− 0.53	− 20.72	59 25 59.02	+ 3 43.43	+ 1 34.4	15 31 28.49	− 3.79	110 37 38.0	− 9.0
	50	α Serpentis		9	38 51.88	− 0.58	**− 20.71**	32 2 0.45	+ 3 7.72	+ 35.0	15 38 30.57	. .	83 12 4.4	− 4.1

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
18	29.96	76.0	73.5
20	30.01	80.9	84.7
24	30.01	83.0	86.1
26	29.99	85.0	88.8
28	29.95	88.8	89.5
29	29.96	76.8	78.2
35	29.96	78.3	79.6
38	29.96	81.0	81.5
39	30.25	73.3	74.2
45	30.25	78.7	80.4
47	30.24	83.2	82.8
49	30.25	76.8	75.9

For summary of the constants of reduction see page 3.

5. Three bisections.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
25	− 2.5	+ 15 45.2	.	+ 15 42.7
26	− 2.6	− 15 45.2	.	− 15 47.8
37	− 2.5	+ 15 46.0	.	+ 15 43.5
38	− 2.6	− 15 46.1	.	− 15 48.7
44	− 2.5	+ 15 44.8	.	+ 15 42.3
45	− 2.6	− 15 44.8	.	− 15 47.4
47	− 3.1	− 7.4	+ 0.3	− 10.2
48	− 3.1	+ 7.4	.	+ 4.3

ZENITH-POINT CORR.

″

1 to 18 + 50.51

19 to 28 + 49.26

29 to 38 + 49.71

39 to 48 + 51.28

49 to 50 + 51.26

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 15, S.	1	ε Serpentis		9	45 20.64	− 0.57	**− 20.72**	34 0 3.72	+ 2 51.74	+ 37.7	15 44 59.34	. .	85 9 54.4	− 3.9
	2	δ Scorpii		9	53 46.68	− 0.53	**− 20.75**	61 6 1.20	+ 3 5.59	+ 1 41.1	15 53 25.42	. .	112 17 9.1	− 3.1
	3	φ Herculis (R)			. . . .	. .	. .	186 18 1.92	+ 3 4.25	+ 6.2	. . . .	. .	44 45 8.8	+ 9.9
	4	φ Herculis			. . . .	. .	. .	353 36 0.68	+ 2 51.35	− 6.2	16 5.0	. .	44 45 7.0	+ 9.9
	5	B. A. C. 5639		9	44 42.32	− 0.52	− 20.74	79 16 6.25	+ 4 3.09	+ 4 48.3	16 44 21.06	− 4.98	130 31 18.8	− 6.5
	6	Piazzi 218		9	48 49.61	− 0.52	− 20.74	79 22 4.75	+ 4 44.88	+ 4 51.3	16 48 28.35	− 5.01	130 38 2.1	− 6.0
	7	B. A. C. 5729		9	56 22.21	− 0.52	− 20.74	76 26 4.05	+ 4 14.27	+ 3 49.2	16 56 0.95	− 4.88	127 40 28.7	− 4.5
	8	B. A. C. 5735		9	57 29.54	− 0.52	− 20.74	72 43 59.22	+ 4 0.54	+ 2 59.1	16 57 8.28	− 4.71	123 57 20.1	− 3.6
	9	B. A. C. 5807		9	8 31.22	− 0.52	− 20.74	72 22 3.58	+ 4 40.96	+ 2 55.5	17 8 9.96	− 4.74	123 36 1.2	− 2.2
	10	B. A. C. 5818		9	9 47.36	− 0.52	− 20.74	69 0 2.82	+ 4 12.44	+ 2 25.7	17 9 26.10	− 4.60	120 13 2.2	− 1.4
	11	b Ophiuchi		9	19 35.59	− 0.53	− 20.75	62 52 0.95	+ 3 39.83	+ 1 49.5	17 19 14.31	. .	114 3 51.5	− 2.7
	12	B. A. C. 5914		9	25 47.68	− 0.52	− 20.75	71 44 2.35	+ 4 53.79	+ 2 49.3	17 25 26.41	− 4.77	122 58 6.6	0.0
	13	Weisse (2) 813		9	28 39.97	− 0.61	− 20.75	19 27 58.42	+ 4 33.30	+ 20.0	17 28 18.61	− 3.44	70 39 12.9	+ 9.4
	14	B. A. C. 5972		9	32 50.94	− 1.19	− 20.75	330 38 0.85	+ 3 16.08	− 31.6	17 32 29.00	− 2.87	21 47 6.5	+13.5
	15	B. A. C. 5980		9	36 18.03	− 0.52	− 20.75	71 23 58.95	+ 3 6.59	+ 2 46.0	17 35 56.76	− 4.78	122 36 12.7	+ 1.3
	16	B. A. C. 6004		9	39 46.32	− 0.52	− 20.75	78 50 6.38	+ 3 36.90	+ 4 38.4	17 39 25.05	− 5.17	130 4 42.9	+ 0.5
	17	B. A. C. 6019		9	42 22.36	− 0.52	− 20.75	78 50 6.02	+ 1 54.59	+ 4 37.7	17 42 1.09	− 5.17	130 2 59.5	+ 0.8
	18	B. A. C. 6031		9	44 55.28	− 0.52	− 20.75	73 10 5.55	+ 3 23.64	+ 3 4.4	17 44 34.01	− 4.88	124 22 54.8	+ 2.0
	19	B. A. C. 6046		9	47 2.48	− 0.52	− 20.75	73 10 5.55	+ 6 45.01	+ 3 5.1	17 46 41.21	− 4.89	124 26 16.9	+ 2.3
	20	B. A. C. 6057		9	48 59.28	− 0.52	− 20.75	71 14 4.82	+ 3 54.74	+ 2 44.7	17 48 38.01	− 4.80	122 27 5.5	+ 2.8
	21	Weisse (2) 1941		9	1 51.01	− 0.67	− 20.75	6 36 2.85	+ 4 0.17	+ 6.6	18 1 29.59	− 3.38	57 46 30.8	+12.2
	22	Weisse (2) 44		8	3 24.51	− 0.70	− 20.75	2 24 2.82	+ 4 55.94	+ 2.4	18 3 3.06	− 3.34	53 35 22.4	+12.5
	23	Weisse (2) 76		9	4 21.60	− 0.70	− 20.76	2 24 2.82	+ 5 54.34	+ 2.5	18 4 0.14	− 3.35	53 36 20.9	+12.6
	24	Weisse (2) 137		9	6 17.46	− 0.70	− 20.76	2 24 2.82	+ 2 43.55	+ 2.4	18 5 56.00	− 3.35	53 33 10.0	+12.6
	25	B. A. C. 6182		9	9 6.26	− 0.52	− 20.76	70 8 7.68	+ 4 11.73	+ 2 35.2	18 8 44.98	− 4.79	121 21 15.8	+ 5.3
	26	B. A. C. 6188		9	10 3.70	− 0.52	− 20.76	70 8 7.68	+ 2 56.92	+ 2 35.1	18 9 42.42	− 4.79	121 20 0.9	+ 5.4
	27	B. A. C. 6211		9	14 5.41	− 0.52	− 20.76	69 46 1.58	+ 4 22.97	+ 2 32.3	18 13 44.13	− 4.78	120 59 18.1	+ 6.0
	28	B. A. C. 6231		9	15 43.40	− 0.62	− 20.76	16 54 1.92	+ 4 21.11	+ 17.2	18 15 22.02	− 3.55	68 5 1.4	+11.9
	29	B. A. C. 6244		8	18 40.84	− 0.52	− 20.76	70 36 5.50	+ 3 49.17	+ 2 39.2	18 18 19.56	− 4.82	121 48 55.1	+ 6.4
	30	B. A. C. 6259		9	20 43.66	− 0.52	− 20.76	77 48 5.42	+ 5 1.17	+ 4 16.2	18 20 22.38	− 5.17	129 3 44.0	+ 5.8
	31	B. A. C. 6302		8	23 36.60	− 1.41	− 20.76	326 10 1.08	+ 3 5.94	− 37.7	18 23 14.43	− 3.46	17 18 50.5	+13.4
	32	Weisse (2) 703		9	26 14.51	− 0.60	− 20.76	21 58 3.28	+ 4 4.46	+ 22.8	18 25 53.15	− 3.64	73 8 51.7	+12.0
	33	Weisse 710		9	31 15.29	− 0.58	− 20.76	29 48 3.12	+ 2 58.67	+ 32.4	18 30 53.95	− 3.77	80 57 55.4	+11.6
	34	B. A. C. 6364		9	36 9.89	− 0.73	− 20.76	358 0 6.18	+ 3 40.20	− 1.9	18 35 48.40	− 3.43	49 10 5.7	+13.4
	35	51 Cephei, S. P.		7	44 57.09	+ 6.22	− 20.76	306 4 . .	. . . .	. .	6 44 42.55	. .	357 13 . .	. .
	36	σ Sagittarii		9	48 22.77	− 0.52	**− 20.76**	65 14 3.78	+ 3 51.27	+ 2 2.1	18 48 1.49	. .	116 26 18.3	− 2.1
	37	ζ Aquilæ		9	0 24.32	− 0.60	**− 20.77**	25 8 3.55	+ 3 32.06	+ 26.6	19 0 2.95	. .	76 18 23.4	− 2.8
20, W.	38	α Aurigæ			. . . .	. .	. .	352 58 8.78	+ 3 7.93	− 6.8	5 8.0	. .	44 7 31.1	− 2.7
	39	β Orionis			. . . .	. .	. .	47 10 15.10	+ 2 37.15	+ 59.8	5 8.9	. .	98 20 13.2	− 3.3
	40	β Tauri			. . . .	. .	. .	10 20 7.40	+ 3 0.18	+ 10.2	5 18.9	. .	61 29 39.0	− 3.2
	41	δ Orionis			. . . .	. .	. .	39 12 9.38	+ 3 55.37	+ 45.2	5 26.0	. .	90 23 11.2	− 3.4
	42	α Orionis			. . . .	. .	. .	31 26 1.85	+ 4 0.58	+ 33.9	5 48.8	. .	82 36 57.5	− 3.0
23, R.	43	α Orionis		9	49 16.21	− 0.76	**− 26.74**	31 25 56.85	+ 4 6.75	+ 33.7	5 48 48.69	. .	82 36 58.5	− 1.3
	44	μ Geminorum		6	16 18.56	− 0.77	**− 26.61**	16 16 5.65	+ 2 59.14	+ 16.1	6 15 51.02	. .	67 25 42.1	− 2.3
	45	γ Geminorum		9	31 22.99	− 0.76	**− 26.81**	22 20 9.45	+ 3 16.12	+ 22.6	6 30 55.46	. .	73 30 9.4	− 1.2
	46	α Canis Majoris		9	40 25.49	− 0.78	**− 26.82**	55 22 11.30	+ 3 30.34	+ 1 19.4	6 39 57.93	. .	106 33 22.2	− 1.3
	47	Mercury II, C		9	53 34.60	− 0.77	− 26.78	17 12 8.15	+ 2 50.38	+ 17.0	6 53 7.05	− 0.25	68 21 36.7	. .
	48	α Canis Minoris		9	33 36.49	− 0.76	**− 26.87**	33 18 5.22	+ 3 27.00	+ 36.0	7 33 8.93	. .	84 28 29.4	− 3.3
	49	β Geminorum		7	38 34.90	− 0.78	**− 26.82**	10 32 6.85	+ 2 53.41	+ 10.2	7 38 7.32	. .	61 41 31.7	− 1.8
24	50	Sun I, N.		9	14 52.47	− 0.77	− 26.81	18 46 1.45	+ 3 5.95	+ 18.6	8 14 24.89	+67.16	69 55 47.2	. .

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	″
20	30.26	75.5	71.1	ZENITH-POINT CORR.	47	− 2.6	. . .	0.0	− . 2.6
37	30.25	71.3	69.5	″	50	− 2.8	+ 15 46.9	.	+ 15 44.1
39	30.18	76.7	78.7						
43	30.18	78.8	82.1	40, 47. Four bisections. 1 to 37 + 51.26					
47	30.17	81.3	84.0	38 to 42 + 50.41					
				43 to 50 + 51.14					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT ORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 24, R.	1	Sun II, S.		9	17 6.79	− 0.77	− 26.81	19 18 1.18	+ 2 39.76	+ 19.1	8 16 39.21	−67.16	70 27 21.2	. .
	2	α Hydræ		2	22 16.33	− 0.77	**− 26.87**	46 58 3.12	+ 3 42.18	+ 58.2	9 21 48.72	. .	98 9 4.7	− 1.2
	3	ε Leonis		9	39 38.21	− 0.77	**− 26.80**	14 30 5.32	+ 4 27.12	+ 14.1	9 39 10.59	. .	65 41 7.7	− 1.6
	4	α Leonis		9	2 34.38	− 0.76	**− 26.84**	26 18 2.82	+ 2 42.99	+ 26.9	10 2 6.76	. .	77 27 33.9	− 1.4
	5	γ^1 Leonis		9	13 57.18	− 0.76	**− 26.89**	18 24 5.72	+ 3 7.27	+ 18.1	10 13 29.56	. .	69 33 52.3	− 1.5
	6	Venus I, N.		9	47 49.23	− 0.76	− 26.87	29 48 2.98	+ 2 53.39	+ 31.1	10 47 21.60	+ 0.50	80 57 48.7	. .
	7	Venus S.		.	. . . .	. .	. .	29 48 2.98	+ 3 9.91	+ 31.1	. . . .	. .	80 58 5.2	. .
	8	Moon I, N.		9	8 32.73	− 0.77	− 27.02	57 44 3.00	+ 3 9.91	+ 1 26.7	15 8 4.94	+67.07	108 55 0.8	. .
	9	μ^1 Bootis		9	20 32.19	− 0.80	**− 27.01**	1 2 7.68	+ 3 49.71	+ 1.1	15 20 4.37	. .	52 12 19.7	− 2.5
	10	α Cor. Bor.		9	30 12.06	− 0.78	**− 27.06**	11 42 5.40	+ 4 28.11	+ 11.5	15 29 44.26	. .	62 53 6.2	− 2.9
	11	α Serpentis		9	38 58.31	− 0.76	**− 27.06**	32 2 5.72	+ 3 1.62	+ 34.5	15 38 30.53	. .	83 12 3.0	− 4.6
	12	ε Serpentis		9	45 27.03	− 0.76	**− 27.00**	34 0 6.58	+ 2 48.88	+ 37.2	15 44 59.25	. .	85 9 53.9	− 3.6
	13	ζ Ursæ Minoris		2	48 46.45	− 1.51	− 27.02	320 42 9.70	+ 2 33.64	− 45.0	15 48 17.92	. .	11 50 19.5	− 2.8
	14	β^1 Scorpii		6	59 6.17	− 0.77	**− 26.97**	58 18 7.70	+ 2 56.73	+ 1 29.2	15 58 38.38	. .	109 28 54.8	− 3.9
	15	β^2 Scorpii		5	59 6.58	− 0.77	− 27.02	58 18 7.70	+ 2 43.31	+ 1 29.2	15 58 38.79	− 3.79	109 28 41.4	− 5.9
	16	σ^1 Cor. Bor.	7	6	10 46.07	− 0.79	− 27.02	4 40 5.60	+ 3 49.89	+ 4.6	16 10 18.26	− 2.73	55 50 21.3	+ 9.7
	17	σ^2 Cor. Bor.	6	5	10 46.29	− 0.79	− 27.02	4 40 5.60	+ 3 45.75	+ 4.6	16 10 18.48	− 2.73	55 50 17.2	+ 9.7
	18	Gould Z. C. 1157	.	6	17 31.46	− 0.83	− 27.02	79 10 12.35	+ 1 2.03	+ 4 40.3	16 17 3.61	− 4.68	130 22 15.9	−10.1
	19	Gould Z. C. 1206	.	5	18 12.25	− 0.83	− 27.02	79 10 12.35	+ 3 15.10	+ 4 41.3	16 17 44.40	− 4.69	130 24 29.9	−10.1
	20	Gould Z. C. 1244	.	6	18 42.84	− 0.83	− 27.02	79 10 12.35	+ 4 4.58	+ 4 41.6	16 18 14.99	− 4.69	130 25 19.7	−10.0
	21	A Draconis	.	9	28 43.09	− 1.10	− 27.02	329 50 8.48	+ 2 21.31	− 32.1	16 28 14.97	. .	20 58 18.9	− 2.9
	22	Anonymous	10	9	37 17.50	− 0.76	− 27.02	52 46 8.15	+ 1 10.07	+ 1 12.9	16 36 49.72	− 3.84	103 54 52.3	− 0.7
	23	Anonymous	8.7	9	37 40.56	− 0.76	− 27.02	52 46 8.15	+ 1 54.59	+ 1 12.9	16 37 12.78	− 3.84	103 55 36.8	− 0.7
	24	B. A. C. 5653	.	9	46 3.03	− 0.80	− 27.02	70 28 11.30	+ 3 43.73	+ 2 35.5	16 45 35.21	− 4.46	121 40 51.7	− 4.7
	25	Piazzi 218	.	9	48 56.04	− 0.83	− 27.02	79 22 10.82	+ 4 43.17	+ 4 48.2	16 48 28.19	− 4.90	130 38 3.4	− 6.6
	26	Stone 9266	.	9	56 14.18	− 0.80	− 27.03	70 14 5.65	+ 3 35.12	+ 2 33.7	16 55 46.35	− 4.50	121 26 35.7	− 3.5
	27	Gould Z. C. 4182	8.7	9	59 31.97	− 0.78	− 27.03	62 38 5.90	+ 3 40.79	+ 1 47.3	16 59 4.16	− 4.24	113 49 55.2	− 1.2
	28	Lalande 31378	.	9	8 19.28	− 0.88	− 27.03	346 18 7.92	+ 2 16.24	− 13.5	17 7 51.37	− 2.70	37 26 31.9	+14.7
	29	Weisse 143	.	9	11 3.91	− 0.76	− 27.03	37 28 9.40	+ 4 2.15	+ 42.8	17 10 36.12	− 3.63	88 39 15.6	+ 6.1
	30	Anonymous	11.0	9	22 40.39	− 0.79	− 27.03	69 50 5.98	+ 4 8.44	+ 2 30.8	17 22 12.57	− 4.60	121 3 6.4	− 0.4
	31	Lalande 32014	.	9	28 53.93	− 0.76	− 27.03	22 24 0.00	+ 4 54.13	+ 23.1	17 28 26.14	− 3.42	73 35 38.4	+10.5
	32	B. A. C. 5980	.	9	36 24.43	− 0.80	− 27.03	71 24 6.92	+ 2 59.05	+ 2 44.4	17 35 56.60	− 4.72	122 36 11.6	+ 0.8
	33	XVII, 17	6.2	9	41 10.06	− 0.78	− 27.03	61 14 3.95	+ 3 42.19	+ 1 41.5	17 40 42.25	− 4.35	112 25 48.8	+ 3.5
	34	B. A. C. 6032	.	9	45 11.23	− 0.80	− 27.03	70 6 9.18	+ 2 32.54	+ 2 34.3	17 44 43.40	− 4.69	121 17 37.2	+ 2.1
	35	B. A. C. 6057	.	9	49 5.58	− 0.80	− 27.03	71 14 9.38	+ 3 52.00	+ 2 43.2	17 48 37.75	− 4.75	122 27 5.8	+ 2.3
	36	B. A. C. 6150 (R)	.	.	. . . .	. .	. .	169 48 12.20	+ 3 22.74	− 10.0	. . . .	. .	61 14 56.3	+14.0
	37	B. A. C. 6150	.	.	. . . .	. .	. .	10 6 7.62	+ 2 14.92	+ 10.0	18 3.0	. .	61 14 53.7	+14.0
	38	Weisse (2) 794	.	9	28 50.59	− 0.78	− 27.03	8 22 10.45	+ 3 3.98	+ 8.3	18 28 22.78	− 3.44	59 31 43.9	+15.1
	39	M. Z. 45, 21	.	9	33 42.70	− 0.79	− 27.03	66 24 9.75	+ 5 59.09	+ 2 7.9	18 33 14.88	− 4.64	117 38 37.9	+ 8.2
	40	B. A. C. 6389	.	9	41 53.53	− 0.80	− 27.03	71 36 10.65	+ 4 51.28	+ 2 47.4	18 41 25.70	− 4.86	122 50 10.5	+ 8.4
	41	Pomona	11	9	50 7.70	− 0.76	− 27.03	53 32 11.42	+ 3 58.09	+ 1 15.9	18 49 39.91	. .	104 43 46.6	− 4.4
	42	D. M. + 20°, 4021	9.5	6	56 45.00	− 0.77	− 27.04	18 10 8.75	+ 3 10.10	+ 18.5	18 56 17.19	− 3.65	69 19 58.5	+15.4
	43	B. VI + 20°, 4022	.	6	56 49.08	− 0.77	− 27.04	18 10 8.75	+ 2 55.91	+ 18.5	18 56 21.27	− 3.65	69 19 44.4	+15.4
	44	Lalande 36268[2]	5.8	3	11 34.16	− 0.76	− 27.04	24 30 10.75	+ 2 33.38	+ 25.6	19 11 6.36	− 3.76	75 39 30.9	+15.6
	45	δ Aquilæ	.	9	20 4.70	− 0.76	**− 27.05**	35 56 7.72	+ 3 42.64	+ 40.8	19 19 36.90	. .	87 6 52.4	− 2.1
	46	κ Aquilæ	.	9	31 4.53	− 0.76	**− 27.06**	46 6 11.08	+ 3 30.23	+ 58.5	19 30 36.73	. .	97 17 1.0	− 2.5
	47	Anonymous	11.0	9	36 54.61	− 0.76	− 27.04	44 4 8.10	+ 3 17.82	+ 54.5	19 36 26.81	− 4.09	95 14 41.6	+16.1
	48	Juno	8.5	7	37 12.57	− 0.76	− 27.04	44 4 8.10	+ 2 28.13	+ 54.4	19 36 44.77	. .	95 13 51.8	− 3.3
	49	λ Ursæ Minoris	.	4	43 10.08	−11.22	− 27.04	309 54 4.02	+ 3 33.41	− 1 7.0	19 42 31.82	. .	1 2 51.6	− 0.6
	50	β Aquilæ	.	9	50 2.73	− 0.76	**− 27.01**	32 42 11.62	+ 3 46.18	+ 36.2	19 49 34.93	. .	83 52 55.2	− 1.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
1	30.16	83.9	87.3		ZENITH-POINT CORR.	1	− 2.9	− 15 47.0	.	− 15 49.9
4	30.13	87.4	88.8			6	− 3.8	+ 8.4	.	+ 4.6
7	30.14	88.4	89.4		″	7	− 3.8	− 8.4	+ 0.4	− 11.8
8	30.10	82.2	83.1	18, 19. One bisection.	1 to 7 + 51.14	8	− 47 22.1	+ 15 20.1	.	− 32 2.0
29	30.09	74.9	74.2	30. Three bisections.	8 to 50 + 49.70					
44	30.09	71.7	70.2	3, 9, 11, 49. Four bisections.						
				8. Five bisections.						

7. Barometer and thermometers read at $11^h\ 5^m$.

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 24, R.	1	τ Aquilæ		9	58 54.29	− 0.76	**− 27.03**	31 52 12.82	+ 3 46.16	+ 35.1	19 58 26.49	. .	83 2 55.3	− 2.2
	2	3 Ursæ Maj., S. P.		9	1 31.30	− 0.01	− 27.04	287 42 13.78	+ 3 14.83	− 2 53.8	8 1 4.25	. .	338 48 56.0	− 2.0
	3	κ Cephei (R)		.	. . . .	. .	. .	218 24 6.78	+ 3 3.07	+ 44.7	. . . .	. .	12 38 26.7	+ 0.2
	4	κ Cephei		5	13 24.39	− 1.45	− 27.04	321 30 6.32	+ 2 42.08	− 44.7	20 12 55.90	. .	12 38 24.9	− 1.6
W.	5	δ Orionis		9	26 28.62	− 0.64	**− 27.63**	39 12 7.38	+ 3 56.43	+ 44.9	5 26 0.33	. .	90 23 9.9	− 4.2
	6	ε Orionis		9	30 43.48	− 0.64	**− 27.67**	40 6 8.05	+ 3 22.27	+ 46.3	5 30 15.19	. .	91 16 37.8	− 3.2
	7	α Orionis		9	49 16.99	− 0.66	**− 27.60**	31 26 5.58	+ 3 56.30	+ 33.6	5 48 48.67	. .	82 36 56.7	− 3.4
	8	μ Geminorum		9	16 19.54	− 0.72	**− 27.62**	16 16 5.72	+ 2 59.11	+ 16.0	6 15 51.14	. .	67 25 42.0	− 2.4
	9	γ Geminorum		9	31 23.81	− 0.70	**− 27.67**	22 20 8.58	+ 3 15.83	+ 22.5	6 30 55.42	. .	73 30 8.1	− 2.5
	10	α Canis Majoris		9	40 26.23	− 0.61	**− 27.71**	55 22 8.22	+ 3 32.94	+ 1 19.0	6 39 57.93	. .	106 33 21.4	− 1.9
	11	θ Geminorum		6	45 31.02	− 0.79	− 27.69	4 44 . .	. . .	. .	6 45 2.54	− 1.88	55 54 . .	. .
	12	ε Canis Majoris		9	54 28.36	− 0.60	**− 27.78**	67 36 9.32	+ 4 1.53	+ 2 11.6	6 54 0.06	. .	118 48 43.6	− 3.9
	13	Mercury II, N.		9	59 32.44	− 0.72	− 27.70	17 4 4.35	+ 4 27.89	+ 16.8	6 59 4.02	− 0.24	68 15 10.2	. .
	14	Mercury S.		.	. . . .	. .	. .	17 4 4.35	+ 4 34.96	+ 16.8	. . . .	. .	68 15 17.3	. .
	15	δ Canis Majoris		7	4 4.69	− 0.60	**− 27.74**	65 0 3.68	+ 4 4.22	+ 1 56.4	7 3 36.39	. .	116 12 25.5	− 2.4
25	16	Sun I, N.		9	18 50.70	− 0.71	− 27.75	18 58 7.90	+ 3 54.25	+ 18.7	8 18 22.24	+67.09	70 8 42.1	. .
	17	Sun II, S.		9	21 4.88	− 0.71	− 27.75	19 30 10.85	+ 3 23.74	+ 19.3	8 20 36.42	−67.09	70 40 15.1	. .
	18	ε Leonis		9	39 39.19	− 0.73	**− 27.82**	14 30 1.78	+ 4 30.64	+ 14.1	9 39 10.67	. .	65 41 7.7	− 1.7
	19	α Leonis		5	2 35.28	− 0.68	**− 27.82**	26 18 . .	. . .	. .	10 2 6.80	. .	77 28 . .	. .
	20	γ¹ Leonis		9	13 58.01	− 0.71	**− 27.77**	18 23 58.75	+ 3 14.38	+ 18.1	10 13 29.49	. .	69 33 52.4	− 1.5
	21	Moon I, N.		9	4 38.16	− 0.54	− 28.15	59 43 59.35	+ 0 51.86	+ 1 34.5	16 4 9.47	+69.08	110 52 46.9	. .
	22	α Scorpii		9	22 43.31	− 0.54	**− 28.22**	64 58 2.92	+ 3 48.03	+ 1 58.2	16 22 14.61	. .	116 10 10.4	− 3.0
	23	β Herculis		9	25 40.62	− 0.62	**− 28.10**	17 4 7.12	+ 4 12.56	+ 17.1	16 25 11.84	. .	68 14 58.0	− 2.6
	24	ζ Ophiuchi		9	31 12.12	− 0.55	**− 28.12**	49 8 6.70	+ 4 2.05	+ 1 4.1	16 30 43.41	. .	100 19 34.1	− 3.1
	25	η Herculis		9	39 22.73	− 0.70	**− 28.21**	359 40 8.80	+ 4 25.33	− 0.2	16 38 53.86	. .	50 50 55.1	− 2.3
	26	B. A. C. 5665		9	47 7.69	− 0.54	− 28.17	69 20 5.52	+ 4 30.67	+ 2 26.1	16 46 38.98	− 4.42	120 33 23.5	− 4.3
	27	Stone 9178		8	47 28.31	− 0.54	− 28.17	69 20 5.52	+ 2 34.48	+ 2 25.9	16 46 59.60	− 4.42	120 31 27.1	− 4.2
	28	B. A. C. 5694		9	49 53.17	− 0.54	− 28.17	70 56 8.32	+ 3 43.56	+ 2 39.2	16 49 24.46	− 4.49	122 8 52.3	− 4.4
	29	Stone 9266		9	56 15.12	− 0.54	− 28.18	70 14 0.35	+ 3 40.78	+ 2 33.2	16 55 46.40	− 4.50	121 26 35.5	− 3.5
	30	O. Arg. N. 16802¹		6	2 14.03	− 0.94	− 28.18	339 6 7.58	+ 3 9.31	− 21.1	17 1 44.91	− 2.45	30 15 17.0	+15.3
	31	O. Arg. N. 16802²		5	2 15.21	− 0.94	− 28.18	339 6 7.58	+ 3 1.89	− 21.1	17 1 46.09	− 2.45	30 15 9.6	+15.3
	32	Lalande 31378		9	8 20.26	− 0.83	− 28.18	346 18 8.12	+ 2 13.18	− 13.5	17 7 51.25	− 2.68	37 26 29.0	+14.9
	33	B. A. C. 5893 (R)		.	. . . .	. .	. .	145 18 7.60	+ 3 38.95	− 38.3	. . . .	. .	85 45 12.9	+ 7.7
	34	B. A. C. 5893		4	21 12.02	− 0.57	− 28.19	34 34 6.10	+ 4 5.25	+ 38.3	17 20 43.26	− 3.61	85 45 10.9	+ 7.7
	35	Lalande 32014		9	28 54.82	− 0.60	− 28.19	22 24 1.75	+ 4 52.74	+ 23.0	17 28 26.03	− 3.41	73 35 38.7	+10.7
	36	B. A. C. 5972		9	32 58.26	− 1.17	− 28.19	330 38 3.92	+ 3 11.01	− 31.1	17 32 28.90	− 2.52	21 47 5.0	+16.2
	37	B. A. C. 5991		9	37 13.11	− 0.60	− 28.19	22 48 6.65	+ 4 27.04	+ 23.4	17 36 44.32	− 3.45	73 59 18.3	+11.1
	38	O. Arg. N. 17464		9	39 55.32	− 1.38	− 28.20	326 20 9.58	+ 2 44.74	− 36.9	17 39 25.74	− 2.48	17 28 38.6	+16.3
	39	B. VI+20°, 3570		9	43 53.19	− 0.61	− 28.20	18 14 5.20	+ 2 39.25	+ 18.3	17 43 24.38	− 3.40	69 23 23.9	+12.2
	40	Weisse 912		9	47 9.20	− 0.56	− 28.20	37 28 6.70	+ 4 30.85	+ 42.6	17 46 40.44	− 3.76	88 39 41.4	+ 9.0
	41	B. A. C. 6058		9	49 39.76	− 0.54	− 28.20	71 26 6.52	+ 4 50.60	+ 2 44.3	17 49 11.02	− 4.76	122 40 2.6	+ 2.3
	42	B. A. C. 6139		9	2 49.56	− 0.54	− 28.21	71 30 8.42	+ 4 35.89	+ 2 45.0	18 2 20.81	− 4.80	122 43 50.5	+ 3.8
	43	Weisse 46		9	5 19.18	− 0.57	− 28.21	35 32 3.60	+ 2 33.69	+ 39.7	18 4 50.40	− 3.78	86 41 38.2	+10.7
	44	B. A. C. 6174		9	8 25.02	− 0.54	− 28.21	75 22 4.30	+ 4 29.12	+ 3 30.2	18 7 56.27	− 4.99	126 36 24.8	+ 3.8
	45	B. A. C. 6192		3	10 38.09	− 0.54	− 28.21	72 12 8.72	+ 4 41.53	+ 2 51.9	18 10 9.34	− 4.85	123 26 3.3	+ 4.6
	46	B. A. C. 6204		9	13 43.09	− 0.54	− 28.21	72 12 8.72	+ 0 57.32	+ 2 51.4	18 13 14.34	− 4.85	123 22 18.6	+ 5.0
	47	Lalande 33895		9	17 38.43	− 0.59	− 28.21	26 50 6.98	+ 4 27.02	+ 28.2	18 17 9.63	− 3.66	78 1 23.4	+12.8
	48	B. A. C. 6256		9	20 30.08	− 0.54	− 28.21	70 24 9.90	+ 2 42.83	+ 2 35.1	18 20 1.33	− 4.79	121 35 49.0	+ 6.1
	49	Gould Z. C. 1243		5	20 58.11	− 0.54	− 28.21	70 24 9.90	+ 4 56.26	+ 2 35.4	18 20 29.36	− 4.79	121 38 2.8	+ 6.2
	50	Weisse (2) 703		9	26 21.97	− 0.60	− 28.22	21 58 5.82	+ 4 0.90	+ 22.5	18 25 53.15	− 3.61	73 8 50.4	+13.9

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
4	30.10	70.8	68.6		ZENITH-POINT CORR.	13	− 2.6	+ 3.5	0.0	+ 0.9
6	30.18	77.1	83.1			14	− 2.6	− 3.6	.	− 6.2
15	30.20	83.8	88.4		″	16	− 2.8	+ 15 46.4	.	+ 15 43.6
17	30.18	85.8	90.0	3, 48. One bisection.	1 to 4 + 49.70	17	− 2.9	− 15 46.5	.	− 15 49.4
20	30.18	86.8	90.7	21. Five bisections.	5 to 20 + 49.14	21	− 49 7.5	+ 15 34.3	.	− 33 33.2
21	30.17	79.8	79.2		21 to 50 + 49.95					
36	30.17	78.6	77.7							

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
June 29, S.	1	Taylor 8095		9	25 0.70	+ 0.05	— 7.38	79 50 15.58	+ 3 24.17	+ 5 1.8	17 24 53.37	— 5.14	131 5 2.8	+ 0.1
	2	Moon I		9	33 13.79	— 0.10	7.39	60 48 . .	. . .	. .	17 33 6.30	+71.56	111 9 . .	. .
	3	μ Herculis		9	42 1.73	— 0.52	**7.38**	11 2 13.15	+ 3 39.83	+ 11.0	17 41 53.82	. .	62 12 25.2	— 2.3
	4	Lalande 32707		9	47 40.74	— 0.31	7.39	32 42 14.78	+ 3 3.36	+ 35.9	17 47 33.04	— 3.67	83 52 15.2	+ 6.2
	5	γ^2 Sagittarii		9	58 25.77	— 0.04	**7.42**	69 12 18.08	+ 4 12.99	+ 2 26.6	17 58 18.33	. .	120 25 18.9	— 2.6
	6	μ Sagittarii		9	6 54.27	— 0.11	**7.45**	59 54 5.40	+ 3 6.76	+ 1 36.3	18 6 46.76	. .	111 5 9.7	— 1.8
	7	δ Ursæ Minoris		7	10 49.24	—10.83	7.40	312 14 3.92	+ 3 52.66	— 1 1.5	18 10 31.01	. .	3 23 16.3	— 0.6
	8	1 Aquilæ		9	28 58.68	— 0.20	**7.36**	47 8 11.00	+ 3 47.79	+ 1 0.4	18 28 51.07	. .	98 19 20.4	— 2.7
July 1, W.	9	δ Ophiuchi		9	8 22.68	— 0.41	**8.91**	42 12 12.28	+ 3 58.52	+ 49.8	16 8 13.30	. .	93 23 21.8	— 2.2
	10	τ Herculis		5	16 24.51	— 0.89	**9.05**	352 14 4.98	+ 3 50.79	— 7.4	16 16 14.64	. .	43 24 9.6	— 1.6
	11	α Scorpii		9	22 23.93	— 0.29	**8.95**	64 58 5.32	+ 3 46.06	+ 1 57.1	16 22 14.65	. .	116 10 9.7	— 3.5
	12	β Herculis		9	25 21.71	— 0.58	**9.03**	17 4 1.25	+ 4 22.53	+ 16.9	16 25 12.13	. .	68 15 1.9	— 2.6
	13	B. A. C. 5557		9	32 5.78	— 0.27	9.00	69 0 9.18	+ 4 52.78	+ 2 22.3	16 31 56.51	— 4.48	120 13 45.5	— 5.1
	14	B. A. C. 5589		9	36 15.69	— 0.26	9.01	69 48 7.32	+ 3 10.22	+ 2 28.4	16 36 6.42	— 4.52	121 0 7.1	— 4.7
	15	B. A. C. 5619		9	39 43.43	— 0.71	9.01	4 34 9.40	+ 3 51.05	+ 4.5	16 39 33.71	— 3.13	55 44 26.1	+ 6.4
	16	B. A. C. 5665		9	46 48.38	— 0.26	9.02	69 20 7.35	+ 4 29.13	+ 2 25.0	16 46 39.10	— 4.54	120 33 22.7	— 3.4
	17	Stone 9178		3	47 9.06	— 0.26	9.03	69 20 7.35	+ 2 34.23	+ 2 24.7	16 46 59.77	— 4.54	120 31 27.5	— 3.4
	18	B. A. C. 5734		5	55 23.61	— 1.33	9.04	336 16 8.70	+ 4 38.79	— 24.1	16 55 13.24	— 2.95	27 26 44.6	+ 9.2
	19	B. A. C. 5753		9	58 26.91	— 0.52	9.04	25 4 4.20	+ 2 36.42	+ 25.8	16 58 17.35	— 3.47	76 13 27.6	+ 4.4
	20	B. A. C 5757		8	58 45.22	— 0.52	9.04	25 4 4.20	+ 4 44.19	+ 25.8	16 58 35.66	— 3.47	76 15 35.4	+ 4.4
	21	B. A. C. 5804		9	7 48.59	— 0.25	9.05	72 12 10.50	+ 3 14.52	+ 2 50.0	17 7 39.29	— 4.72	123 24 36.2	— 1.4
	22	Weisse (2) 308		9	13 3.64	— 0.55	9.06	21 22 7.40	+ 4 18.24	+ 21.6	17 12 54.03	— 3.45	72 33 8.4	+ 5.6
	23	B. A. C. 5891		9	21 11.32	— 0.23	9.07	75 26 6.92	+ 4 41.67	+ 3 29.4	17 21 2.02	— 4.91	126 40 39.2	— 0.2
	24	B. A. C. 5925		9	27 13.98	— 0.25	9.08	71 14 11.25	+ 6 36.42	+ 2 41.5	17 27 4.65	— 4.72	122 29 50.4	+ 1.0
	25	B. A. C. 5972		9	32 40.60	— 1.64	9.09	330 38 3.08	+ 3 18.96	— 31.0	17 32 29.87	— 3.21	21 47 12.2	+ 9.3
	26	B. VI + 14°, 3321		9	38 12.60	— 0.53	9.10	24 26 6.10	+ 5 59.45	+ 25.2	17 38 2.97	— 3.55	75 38 52.0	+ 6.6
	27	Lalande 32408		9	39 8.11	— 0.53	9.10	24 26 6.10	— 0 45.31	+ 25.1	17 38 58.48	— 3.55	75 32 7.1	+ 6.7
	28	Weisse 912		9	46 49.92	— 0.44	9.11	37 28 8.10	+ 4 32.16	+ 42.4	17 46 40.37	— 3.77	88 39 43.9	+ 6.0
	29	B. A. C. 6076		9	52 23.84	— 0.25	9.12	72 10 10.62	+ 4 18.03	+ 2 50.4	17 52 14.47	— 4.78	123 23 40.2	+ 3.9
	30	γ^2 Sagittarii		9	58 27.83	— 0.27	**9.24**	69 12 9.82	+ 4 21.97	+ 2 24.8	17 58 18.43	. .	120 25 17.8	— 3.8
	31	μ Sagittarii		9	6 56.14	— 0.32	**9.10**	59 54 5.98	+ 3 6.23	+ 1 35.3	18 6 46.68	. .	111 5 8.7	— 2.7
	32	δ Ursæ Minoris		6	10 49.33	— 9.50	9.14	312 14 3.90	+ 3 50.61	— 1 0.7	18 10 30.69	. .	3 23 15.0	— 1.3
	33	1 Aquilæ		9	29 0.59	— 0.38	**9.07**	47 8 10.52	+ 3 48.52	+ 59.7	18 28 51.06	. .	98 19 19.9	— 3.0
	34	α Lyræ		9	33 9.98	— 0.76	**9.20**	0 10 10.05	+ 2 48.51	+ 0.2	18 33 0.05	. .	51 19 20.0	— 2.8
2, S.	35	γ Tauri		9	13 16.69	— 0.52	**9.76**	23 30 5.75	+ 2 36.89	+ 24.2	4 13 6.33	. .	74 39 28.0	— 1.9
	36	ε Tauri		9	21 55.68	— 0.54	**9.83**	19 54 2.02	+ 4 11.91	+ 20.2	4 21 45.30	. .	71 4 55.3	— 2.6
	37	α Tauri		9	29 20.99	— 0.52	**9.82**	22 34 5.10	+ 2 53.75	+ 23.1	4 29 10.63	. .	73 43 43.1	— 2.5
	38	α Aurigæ		9	8 10.87	— 0.78	**9.83**	352 58 . .	. . .	. .	5 8 0.25	. .	44 8 . .	. .
	39	β Orionis		8	9 3.46	— 0.41	**9.96**	47 10 9.55	+ 2 45.72	+ 59.7	5 8 53.21	. .	98 20 16.2	— 3.6
3	40	Sun I, S.		9	49 27.92	— 0.56	9.84	16 7 54.40	+ 4 28.32	+ 16.0	6 49 17.52	+68.60	67 18 59.9	. .
5, W.	41	β Bootis		9	57 44.91	— 0.66	**11.59**	357 58 7.98	+ 4 2.97	— 1.9	14 57 32.69	. .	49 8 30.2	— 1.3
	42	48 Cephei (H.), S. P.		9	5 39.23	— 0.26	11.56	296 10 5.18	+ 3 13.49	— 1 53.6	3 5 27.41	. .	347 17 46.3	— 0.8
	43	β Libræ		9	10 55.20	— 0.72	**11.55**	47 46 6.00	+ 3 23.30	+ 1 2.0	15 10 42.92	. .	98 56 52.5	— 3.1
	44	μ^1 Bootis		9	20 16.91	— 0.66	**11.55**	1 2 5.22	+ 3 54.55	+ 1.1	15 20 4.69	. .	52 12 22.1	— 2.7
	45	α Cor. Bor. (R)		.	. . . .	. .	. .	168 10 9.20	+ 3 11.08	— 11.7	. . . .	. .	62 53 12.6	+ 0.9
	46	α Cor. Bor.		.	. . . .	. .	. .	11 42 7.20	+ 4 29.74	+ 11.7	15 29.7	. .	62 53 9.8	— 1.9
	47	γ Camelop., S. P.		9	38 10.37	— 0.34	11.56	289 50 5.42	+ 3 58.09	— 2 34.2	3 37 58.47	— 2.91	340 57 50.5	+ 8.6
	48	B. A. C. 5230		9	43 43.48	— 0.70	11.57	41 54 1.05	+ 2 51.82	+ 50.6	15 43 31.21	— 3.50	93 4 4.7	— 3.6
	49	B. A. C. 5284		9	51 15.58	— 0.67	11.57	22 46 3.28	+ 4 15.99	+ 23.7	15 51 3.34	— 3.19	73 57 4.2	+ 1.6
	50	B. A. C. 5348		9	59 55.77	— 0.68	11.57	339 58 3.10	+ 2 53.15	— 20.5	15 59 43.52	— 2.58	31 6 56.9	+ 9.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
8	29.95	72.2	69.2	ZENITH-POINT CORR.	40	— 2.4	— 15 44.6	.	— 15 47.0
9	29.79	78.1	77.4	″					
32	29.77	73.6	72.3						
35	30.03	72.0	75.1	16, 17. One bisection. — 1 to 8 + 51.66					
40	30.02	77.9	80.7	7, 42. Three bisections. — 9 to 34 + 51.82					
41	29.90	66.6	66.5	35 to 40 + 51.83					
				41 to 50 + 53.15					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 5, W.	1	φ Herculis . . .	.	9	5 18.29	— 0.66	— 11.57	353 36 5.90	+ 2 48.16	— 6.3	16 5 6.06	— 2.82	44 45 9.0	+ 7.8
	2	17¹ Draconis . .	.	6	33 41.75	— 0.67	— 11.57	345 40 7.38	+ 3 51.91	— 14.4	16 33 29.51	— 2.85	36 50 6.1	+ 9.3
	3	17² Draconis . .	.	5	33 42.19	— 0.67	— 11.57	345 40 7.38	+ 3 53.66	— 14.4	16 33 29.95	— 2.85	36 50 7.8	+ 9.3
	4	B. A. C. 5629 .	.	9	40 49.04	— 0.67	— 11.57	342 56 2.50	+ 3 15.45	— 17.3	16 40 36.80	— 2.85	34 5 21.9	+ 9.6
	5	B. A. C. 5635 .	.	9	43 37.48	— 0.84	— 11.57	79 46 6.62	+ 4 5.78	+ 5 4.6	16 43 25.07	— 5.04	131 1 38.2	— 5.9
	6	B. A. C. 5653 .	.	9	45 47.60	— 0.79	— 11.57	70 28 5.35	+ 3 43.30	+ 2 38.5	16 45 35.24	— 4.58	121 40 48.3	— 4.1
	7	B. A. C. 5696 .	.	9	49 46.69	— 0.80	— 11.57	71 52 8.18	+ 2 55.62	+ 2 51.3	16 49 34.32	— 4.65	123 4 16.3	— 3.8
	8	B. A. C. 5735 .	.	9	57 20.70	— 0.80	— 11.57	72 44 6.82	+ 3 51.33	+ 3 0.6	16 57 8.33	— 4.72	123 57 20.0	— 3.1
	9	Weisse (2) 1790	.	9	59 48.82	— 0.67	— 11.57	19 4 5.00	+ 3 16.84	+ 19.6	16 59 36.58	— 3.37	70 14 2.6	+ 5.9
	10	B. A. C. 5781 .	.	9	3 53.11	— 0.73	— 11.57	54 24 3.52	+ 2 49.92	+ 1 19.1	17 3 40.81	— 4.09	105 34 33.7	+ 0.6
	11	B. A. C. 5804 .	.	9	7 51.63	— 0.80	— 11.57	72 12 8.82	+ 3 11.60	+ 2 54.9	17 7 39.26	— 4.73	123 24 36.5	— 1.8
	12	B. A. C. 5818 .	.	9	9 38.32	— 0.78	— 11.57	69 0 9.05	+ 4 4.77	+ 2 26.9	17 9 25.97	— 4.60	120 13 1.9	— 1.1
	13	Weisse (2) 308 .	.	9	13 6.30	— 0.67	— 11.57	21 22 7.32	+ 4 17.30	+ 22.2	17 12 54.06	— 3.45	72 33 8.0	+ 6.3
	14	B. VI+53°, 1937	.	9	19 27.80	— 0.67	— 11.57	345 18 6.62	+ 3 35.95	— 14.8	17 19 15.56	— 3.08	36 27 49.0	+ 9.9
	15	B. A. C. 5891 .	.	9	21 14.22	— 0.81	— 11.57	75 26 12.25	+ 4 29.90	+ 3 35.4	17 21 1.84	— 4.92	126 40 38.8	— 0.6
	16	Taylor 8095 . .	.	9	25 5.73	— 0.84	— 11.57	79 50 8.45	+ 3 24.55	+ 5 6.8	17 24 53.32	— 5.17	131 5 1.0	— 0.7
	17	B. A. C. 5925 .	.	9	27 16.93	— 0.79	— 11.57	71 16 6.70	+ 4 35.79	+ 2 46.1	17 27 4.57	— 4.73	122 29 49.8	+ 0.6
	18	B. A. C. 5950 .	.	6	30 6.65	— 0.67	— 11.57	343 34 5.48	+ 3 43.27	— 16.6	17 29 54.41	— 3.12	34 43 53.4	+10.1
	19	B. A. C. 5951 .	.	5	30 12.15	— 0.67	— 11.57	343 34 5.48	+ 4 24.33	— 16.6	17 29 59.91	— 3.12	34 44 34.4	+10.1
	20	B. A. C. 5970 .	.	9	34 37.01	— 0.83	— 11.57	77 42 9.45	+ 5 11.94	+ 4 15.5	17 34 24.61	— 5.07	128 57 58.1	+ 0.8
	21	B. VI+14°, 3321	.	9	38 15.21	— 0.68	— 11.57	24 26 3.95	+ 6 1.23	+ 25.9	17 38 2.96	— 3.55	75 38 52.3	+ 7.2
	22	Lalande 32408 .	.	9	39 10.73	— 0.68	— 11.57	24 26 3.95	— 0 44.52	+ 25.7	17 38 58.48	— 3.56	75 32 6.3	+ 7.3
	23	B. A. C. 6016 .	.	9	41 47.64	— 0.79	— 11.57	70 28 8.08	+ 2 26.45	+ 2 38.7	17 41 35.28	— 4.72	121 39 34.4	+ 2.5
	24	B. A. C. 6029 .	.	9	44 38.58	— 0.80	— 11.58	73 30 7.62	+ 6 12.26	+ 3 10.1	17 44 26.20	— 4.87	124 45 51.2	+ 2.5
	25	B. A. C. 6037 .	.	9	45 44.81	— 0.80	— 11.58	73 30 7.62	+ 2 16.55	+ 3 9.4	17 45 32.43	— 4.86	124 41 54.8	+ 2.6
	26	B. A. C. 6057 .	.	9	48 50.07	— 0.79	— 11.58	71 14 4.68	+ 3 54.03	+ 2 45.8	17 48 37.70	— 4.76	122 27 5.7	+ 3.2
	27	Weisse (2) 1591	.	9	51 9.12	— 0.67	— 11.58	16 20 8.42	+ 4 2.56	+ 16.7	17 50 56.87	— 3.47	67 30 48.9	+ 8.5
	28	B. A. C. 6095 .	.	9	54 38.81	— 0.66	— 11.58	355 24 4.90	+ 3 46.81	— 4.5	17 54 26.57	— 3.28	46 34 8.4	+ 9.8
	29	Weisse (2) 1941	.	9	1 41.89	— 0.66	— 11.58	6 36 7.05	+ 3 58.03	+ 6.6	18 1 29.65	— 3.39	57 46 32.9	+ 9.4
	30	μ Sagittarii . .	.	9	6 59.02	— 0.75	— 11.52	59 54 2.58	+ 3 6.19	+ 1 37.7	18 6 46.69	. .	111 5 7.7	— 3.7
	31	δ Ursæ Minoris .	.	5	10 43.28	— 1.51	— 11.58	312 14 2.02	+ 3 53.00	— 1 2.3	18 10 30.19	. .	3 23 13.9	— 1.3
	32	η Serpentis . .	.	9	15 28.40	— 0.70	— 11.56	41 44 5.42	+ 4 13.81	+ 50.7	18 15 16.12	. .	92 55 31.1	— 2.0
	33	B. A. C. 6289 (R)	.	.	. . . .	. .	. .	199 46 7.60	+ 4 1.89	+ 20.5	. . . .	. .	31 15 51.2	+10.1
	34	B. A. C. 6289 .	.	8	22 26.98	— 0.68	— 11.58	340 6 10.40	+ 3 40.04	— 20.5	18 22 14.72	— 3.37	31 15 51.1	+10.1
	35	1 Aquilæ . . .	.	9	29 3.47	— 0.72	— 11.57	47 8 6.60	+ 3 50.61	+ 1 1.2	18 28 51.17	. .	98 19 19.6	— 3.0
	36	Weisse 710 . .	.	9	31 6.06	— 0.69	— 11.58	29 48 7.25	+ 2 56.50	+ 32.6	18 30 53.79	— 3.72	80 57 57.6	+ 9.7
	37	B. A. C. 6359 .	.	9	35 58.66	— 0.82	— 11.58	77 12 3.58	+ 3 26.21	+ 4 5.5	18 35 46.26	— 5.05	128 25 56.5	+ 8.5
	38	B. A. C. 6417 .	.	5	39 11.14	— 1.04	— 11.58	315 34 3.05	+ 3 33.80	— 55.5	18 38 58.52	— 5.47	6 43 2.5	+ 9.4
	39	O. Arg. N. 18618	.	5	42 48.19	— 0.67	— 11.58	344 4 6.00	+ 3 16.77	— 16.2	18 42 35.94	— 3.44	35 13 27.8	+10.0
	40	B. A. C. 6414 .	.	9	45 24.09	— 0.79	— 11.58	69 40 10.82	+ 3 5.81	+ 2 32.4	18 45 11.72	— 4.69	120 52 10.2	+ 9.8
	41	B. A. C. 6435 .	.	9	47 40.27	— 0.82	— 11.58	76 16 5.00	+ 5 32.34	+ 3 49.5	18 47 27.87	— 4.99	127 31 48.0	+ 9.9
	42	B. A. C. 6444 .	.	9	48 57.59	— 0.82	— 11.58	76 16 5.00	+ 3 5.92	+ 3 48.8	18 48 45.19	— 4.98	127 29 20.9	+10.1
	43	O. Arg. N. 18836	.	9	56 10.29	— 0.70	— 11.58	333 44 5.12	+ 3 51.76	— 28.0	18 55 58.01	— 3.64	24 53 50.1	+ 9.6
	44	Weisse (2) 1757	.	9	57 59.92	— 0.67	— 11.58	19 20 12.88	+ 3 28.24	+ 20.0	18 57 47.67	— 3.61	70 30 22.3	+10.9
	45	B. A. C. 6530 .	.	4	59 36.35	— 0.67	— 11.58	346 44 8.12	+ 4 9.47	— 13.3	18 59 24.10	— 3.48	37 54 25.5	+10.0
	46	B. A. C. 6541 .	.	9	2 12.04	— 0.83	— 11.58	78 16 6.40	+ 4 27.42	+ 4 28.1	19 1 59.63	— 5.06	129 31 23.1	+11.6
	47	d Sagittarii . .	.	9	11 0.41	— 0.74	— 11.59	57 58 6.52	+ 3 27.75	+ 1 30.8	19 10 48.09	. .	109 9 26.3	— 2.8
	48	B. A. C. 6599 .	.	9	12 32.26	— 0.66	— 11.58	0 54 6.10	+ 3 51.89	+ 1.0	19 12 20.02	— 3.50	52 4 20.2	+10.6
	49	δ Aquilæ . . .	.	9	19 49.09	— 0.69	— 11.65	35 56 7.15	+ 3 45.30	+ 41.3	19 19 36.82	. .	87 6 54.9	— 2.6
	50	Lalande 36715 .	.	9	21 11.07	— 0.68	— 11.58	26 2 . .	. . .	. .	19 20 58.81	— 3.69	77 12 . .	. .

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
8	29.90	64.6	62.8
30	29.91	63.7	61.7
48	. .	. .	60.9

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

″

1 to 49 + 53.15

45. One bisection.
38. Three bisections.
31. Five bisections.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 5, W.	1	B. A. C. 6711		9	29 45.73	− 0.67	− 11.58	0 20 9.30	+ 2 56.69	+ 0.3	19 29 33.48	− 3.53	51 29 27.5	+10.6
E.	2	γ Tauri		9	13 18.87	− 0.67	− 11.71	23 30 5.58	+ 2 35.04	+ 24.5	4 13 6.42	. .	74 39 26.3	− 3.4
	3	α Aurigæ		9	8 12.87	− 0.72	− 11.81	352 58 7.48	+ 3 8.30	− 6.9	5 8 0.33	. .	44 7 30.1	− 2.5
	4	β Orionis		8	9 5.68	− 0.68	− 11.86	47 10 5.85	+ 2 47.41	+ 1 0.5	5 8 53.18	. .	98 20 15.0	− 4.2
	5	ε Orionis		9	30 27.30	− 0.67	− 11.86	40 6 1.62	+ 3 30.93	+ 47.3	5 30 14.80	. .	91 16 41.1	− 2.6
6	6	α Hydræ		9	22 1.38	− 0.68	− 12.02	46 58 4.00	+ 3 40.93	+ 59.5	9 21 48.73	+ 0.47	98 9 5.6	− 2.4
	7	Venus I, N.		9	26 40.33	− 0.67	− 11.97	21 55 58.78	+ 3 45.33	+ 22.4	9 26 27.69	. .	73 6 27.7	. .
	8	Venus S.		.	. . . .	. .	. .	21 55 58.78	+ 4 0.37	+ 22.4	. . . .	. .	73 6 42.8	. .
	9	α Leonis		9	2 19.42	− 0.67	− 11.92	26 18 5.08	+ 2 39.81	+ 27.4	10 2 6.75	. .	77 27 33.5	− 2.0
	10	γ¹ Leonis		9	13 42.30	− 0.67	− 12.03	18 24 3.10	+ 3 8.49	+ 18.5	10 13 29.63	. .	69 33 51.3	− 2.1
	11	α Cor. Bor.		9	29 57.24	− 0.64	− 12.14	11 42 14.50	+ 4 20.84	+ 11.7	15 29 44.43	− 3.84	62 53 8.2	− 3.3
	12	M. Z. 259, 15	6.3	9	31 41.50	− 0.67	− 12.17	59 26 16.60	+ 3 24.08	+ 1.35.2	15 31 28.66	. .	110 37 37.1	− 9.3
	13	α Serpentis		9	38 43.47	− 0.63	− 12.18	32 2 6.90	+ 3 2.08	+ 35.3	15 38 30.67	. .	83 12 5.5	− 3.9
	14	ε Serpentis		9	45 12.24	− 0.64	− 12.18	34 0 5.92	+ 2 51.06	+ 38.1	15 44 59.43	. .	85 9 56.3	− 2.9
	15	ζ Ursæ Minoris		9	48 33.17	− 1.09	− 12.17	320 42 2.58	+ 2 44.63	− 46.0	15 48 19.91		11 50 22.4	− 2.6
	16	ε Cor. Bor.		9	52 58.04	− 0.64	− 12.18	11 36 5.25	+ 4 1.09	+ 11.6	15 52 45.23	. .	62 46 39.1	− 3.2
	17	B. A. C. 5348 (R)		.	. . . .	. .	. .	199 56 7.02	+ 2 54.35	+ 20.5	. . . .	. .	31 6 59.3	+ 9.5
	18	B. A. C. 5348		5	59 56.31	− 0.72	− 12.18	339 58 6.55	+ 2 50.09	− 20.5	15 59 43.41	− 2.55	31 6 57.3	+ 9.5
	19	Radcliffe 3513		9	6 59.80	− 0.72	− 12.18	340 38 9.98	+ 0 52.95	− 19.8	16 6 46.90	− 2.60	31 45 4.3	+ 9.6
	20	Gould Z. C. 1244		8	18 28.05	− 0.73	− 12.18	79 10 11.10	+ 4 3.04	+ 4 47.7	16 18 15.14	− 4.87	130 25 23.0	− 9.0
	21	Anonymous		9	37 2.77	− 0.65	− 12.19	52 46 7.55	+ 1 13.74	+ 1 14.4	16 36 49.93	− 3.95	103 54 56.9	− 1.6
	22	Anonymous		8	37 25.65	− 0.65	− 12.19	52 46 7.55	+ 1 54.01	+ 1 14.4	16 37 12.81	− 3.96	103 55 37.2	− 1.6
	23	B. A. C. 5635		9	43 38.17	− 0.73	− 12.19	79 46 9.58	+ 4 2.71	+ 5 4.5	16 43 25.25	− 5.03	131 1 38.0	− 6.0
	24	B. A. C. 5665		8	46 52.14	− 0.69	− 12.19	69 20 5.12	+ 4 27.32	+ 2 29.3	16 46 39.26	− 4.53	120 33 22.9	− 3.8
	25	Stone 9178		8	47 12.75	− 0.69	− 12.19	69 20 5.12	+ 2 30.97	+ 2 29.2	16 46 59.87	− 4.53	120 31 26.5	− 3.7
	26	B. A. C. 5696		9	49 47.33	− 0.70	− 12.19	71 52 10.78	+ 2 53.11	+ 2 51.4	16 49 34.44	− 4.65	123 4 16.5	− 3.9
	27	Piazzi 244		9	52 15.88	− 0.66	− 12.19	53 28 4.78	+ 5 24.32	+ 1 16.4	16 52 3.03	− 4.02	104 41 6.7	− 0.3
	28	B. A. C. 5729		9	56 13.94	− 0.72	− 12.19	76 26 4.28	+ 4 12.98	+ 3 51.2	16 56 1.03	− 4.89	127 40 29.7	− 3.9
	29	B. A. C. 5762		9	0 26.93	− 0.69	− 12.20	69 42 6.30	+ 4 2.25	+ 2 32.3	17 0 14.04	− 4.59	120 55 2.1	− 2.3
	30	Weisse (2) 1844		9	1 34.73	− 0.63	− 12.20	16 34 2.00	+ 4 29.31	+ 16.9	17 1 21.90	− 3.34	67 45 9.4	+ 6.6
	31	Anonymous		9	6 45.66	− 0.67	− 12.20	62 10 5.90	+ 3 14.69	+ 1 47.2	17 6 32.79	− 4.33	113 21 29.0	− 0.4
	32	B. A. C. 5804		9	7 52.21	− 0.70	− 12.20	72 12 9.08	+ 3 10.52	+ 2 55.0	17 7 39.31	− 4.72	123 24 35.8	− 1.8
	33	Weisse (2) 308		9	13 6.93	− 0.63	− 12.20	21 22 4.28	+ 4 20.78	+ 22.3	17 [illegible] 54.10	− 3.44	72 33 8.6	+ 6.5
	34	B. A. C. 5891		9	21 15.01	− 0.71	− 12.20	75 26 5.18	+ 4 37.19	+ 3 35.6	17 [illegible] 2.10	− 4.92	126 40 39.2	− 0.7
	35	Anonymous	10	8	22 25.60	− 0.69	− 12.20	69 50 6.68	+ 4 7.28	+ 2 33.6	17 22 12.71	− 4.66	121 3 8.8	+ 0.2
	36	B. A. C. 5914		9	25 39.48	− 0.70	− 12.20	71 44 5.25	+ 4 51.24	+ 2 50.8	17 25 26.58	− 4.75	122 58 8.5	+ 0.3
	37	B. A. C. 5925		9	27 17.67	− 0.70	− 12.20	71 16 8.50	+ 4 35.17	+ 2 46.2	17 27 4.77	− 4.73	122 29 51.1	+ 0.6
	38	B. A. C. 5970		9	34 37.51	− 0.72	− 12.20	77 42 6.80	+ 5 16.45	+ 4 15.9	17 34 24.59	− 5.07	128 58 0.3	+ 0.7
	39	B. A. C. 6004		9	39 38.06	− 0.73	− 12.21	78 50 9.48	+ 3 33.70	+ 4 40.7	17 39 25.12	− 5.14	130 4 45.1	+ 1.2
	40	B. A. C. 6019		9	42 14.07	− 0.73	− 12.21	78 50 9.48	+ 1 49.04	+ 4 40.0	17 42 1.13	− 5.14	130 2 59.7	+ 1.5
	41	B. A. C. 6031		9	44 46.97	− 0.70	− 12.21	73 10 6.95	+ 3 21.69	+ 3 6.0	17 44 34.06	− 4.85	124 22 55.8	+ 2.5
	42	B. A. C. 6046		9	46 54.11	− 0.70	− 12.21	73 10 6.95	+ 6 42.20	+ 3 6.6	17 46 41.20	− 4.85	124 26 17.0	+ 2.7
	43	B. A. C. 6076		9	52 27.52	− 0.70	− 12.21	72 10 6.40	+ 4 20.23	+ 2 55.3	17 52 14.61	− 4.81	123 23 43.1	+ 3.5
	44	Weisse (2) 1764		9	56 33.28	− 0.64	− 12.21	5 34 3.08	+ 6 9.40	+ 5.6	17 56 20.43	− 3.36	56 46 39.3	+ 9.6
	45	Weisse (2) 1797		9	57 33.03	− 0.64	− 12.21	5 34 3.08	+ 0 34.92	+ 5.6	17 57 20.18	− 3.37	56 41 4.8	+ 9.6
	46	B. A. C. 6131	8	9	1 38.77	− 0.69	− 12.21	69 56 6.95	+ 5 18.32	+ 2 34.9	18 1 25.87	− 4.72	121 10 21.4	+ 4.8
	47	B. A. C. 6144		9	2 38.80	− 0.70	− 12.21	70 56 5.25	+ 4 23.33	+ 2 43.5	18 2 25.89	− 4.76	122 9 33.3	+ 4.8
	48	B. A. C. 6181		9	8 50.48	− 0.69	− 12.22	69 58 6.28	+ 4 30.08	+ 2 35.2	18 8 37.57	− 4.72	121 11 32.8	+ 5.6
	49	Anonymous		8	13 56.26	− 0.66	− 12.22	55 2 6.85	+ 4 57.96	+ 1 21.4	18 13 43.38	− 4.22	106 14 47.4	+ 7.3
	50	Anonymous		8	14 4.21	− 0.66	− 12.22	55 2 6.85	+ 3 46.16	+ 1 21.3	18 13 51.33	− 4.22	106 13 35.5	+ 7.3

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
2	30.07	67.8	68.5
10	30.10	76.0	77.3
11	30.10	70.0	69.3
20	30.09	68.4	67.3
34	30.09	66.3	65.1

For summary of the constants of reduction see page 3.

20. One bisection.
2. Four bisections.

ZENITH-POINT CORR.

	″
1	+ 53.15
2 to 10	+ 52.90
11 to 50	+ 52.41

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
7	− 2.6	+ 7.6	.	+ 5.0
8	− 2.6	− 7.6	+ 0.2	− 10.0

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 6, E.	1	B. A. C. 6239		9	17 43.99	− 0.69	− 12.22	69 36 3.58	+ 3 48.32	+ 2 32.2	18 17 31.08	− 4.71	120 48 45.3	+ 6.7
	2	B. A. C. 6254		9	20 3.03	− 0.70	− 12.22	72 18 6.95	+ 1 11.13	+ 2 56.4	18 19 50.11	− 4.82	123 28 35.7	+ 6.8
	3	Gould Z. C. 1335	8.5	9	22 13.80	− 0.70	− 12.22	72 18 6.95	+ 7 20.55	+ 2 57.5	18 22 0.88	− 4.83	123 34 46.2	+ 7.0
	4	Anonymous	10.8	9	26 46.06	− 0.72	− 12.22	76 46 6.15	+ 1 51.09	+ 3 57.6	18 26 33.12	− 5.04	127 58 16.0	+ 7.3
	5	Tr. Z. 47, 24	8.0	9	27 36.56	− 0.72	− 12.22	76 46 6.15	+ 3 15.52	+ 3 58.0	18 27 23.62	− 5.04	127 59 40.9	+ 7.4
	6	Anonymous	10.0	5	28 7.04	− 0.72	− 12.22	76 46 6.15	+ 1 58.90	+ 3 57.6	18 27 54.10	− 5.04	127 58 23.8	+ 7.5
	7	Antiope		9	35 55.53	− 0.68	− 12.23	63 50 6.40	+ 1 59.09	+ 1 55.5	18 35 42.62	. .	115 0 22.2	− 4.9
	8	B. A. C. 6389		9	41 38.68	− 0.70	− 12.23	71 36 6.55	+ 4 52.77	+ 2 50.2	18 41 25.75	− 4.78	122 50 10.7	+ 9.3
	9	51 Cephei, S. P.		5	44 51.12	+ 2.14	− 12.23	306 4 2.58	+ 4 20.71	− 1 17.9	6 44 41.03	. .	357 13 26.6	− 1.6
	10	Anonymous	10.0	9	49 30.97	− 0.69	− 12.23	67 44 6.62	+ 4 16.38	+ 2 18.7	18 49 18.05	− 4.62	118 57 2.9	+10.3
	11	M. Z. 47, 23	9.0	9	51 4.40	− 0.69	− 12.23	67 44 6.62	+ 1 29.04	+ 2 18.4	18 50 51.48	− 4.61	118 54 15.3	+10.5
	12	D. M. + 20°, 4021	8.5	5	56 29.84	− 0.63	− 12.23	18 10 7.60	+ 3 15.72	+ 18.8	18 56 16.98	− 3.60	69 20 3.3	+11.1
	13	B. VI + 20°, 4022	6	5	56 34.12	− 0.63	− 12.23	18 10 7.60	+ 2 59.95	+ 18.8	18 56 21.26	− 3.60	69 19 47.6	+11.1
	14	B. A. C. 6511		7	58 44.36	− 0.71	− 12.23	76 0 11.12	+ 3 23.62	+ 3 45.3	18 58 31.42	− 4.96	127 13 41.2	+11.2
	15	Pomona		9	5 37.83	− 0.65	− 12.23	53 12 8.72	+ 2 43.27	+ 1 16.2	19 5 24.95	. .	104 22 29.4	− 4.5
	16	*d* Sagittarii		9	11 0.99	− 0.66	**− 12.23**	57 58 3.80	+ 3 30.87	+ 1 31.1	19 10 48.09	. .	109 9 27.0	− 2.1
	17	B. A. C. 6594		9	13 8.42	− 0.70	− 12.24	70 50 10.25	+ 2 32.44	+ 2 42.9	19 12 55.48	− 4.69	122 1 46.8	+12.8
	18	δ Aquilæ		9	19 49.61	− 0.64	**− 12.21**	35 56 4.28	+ 3 47.70	+ 41.4	19 19 36.73	. .	87 6 54.6	− 2.7
	19	B. A. C. 6690 (R)		.	. . . .	. .	. .	168 46 8.45	+ 3 21.74	− 11.3	. . . .	. .	62 17 2.3	+11.6
	20	B. A. C. 6690		.	. . . .	. .	. .	11 8 4.52	+ 2 23.30	+ 11.3	19 26.0	. .	62 17 0.3	+11.6
	21	κ Aquilæ		9	30 49.53	− 0.64	**− 12.34**	46 6 6.18	+ 3 37.15	+ 59.4	19 30 36.65	. .	97 17 3.9	− 1.4
	22	B. A. C. 6753		9	38 13.48	− 0.69	− 12.25	69 58 7.62	+ 3 42.66	+ 2 35.8	19 37 0.54	− 4.59	121 10 47.3	+15.4
	23	γ Aquilæ		9	40 55.53	− 0.63	**− 12.19**	28 30 7.20	+ 3 9.07	+ 31.1	19 40 42.65	. .	79 40 8.6	− 2.3
	24	λ Ursæ Minoris		5	42 54.70	− 7.35	− 12.25	309 54 4.00	+ 3 39.98	− 1 8.1	19 42 35.10	. .	1 2 57.1	− 1.0
	25	Juno		9	52 31.09	− 0.64	− 12.25	42 56 6.82	+ 1 57.69	+ 53.2	19 52 18.20	. .	94 5 18.9	− 3.1
S.	26	α Tauri		9	29 23.64	− 0.75	**− 12.14**	22 34 7.28	+ 2 51.53	+ 23.2	4 29 10.67	. .	73 43 43.2	− 2.1
	27	ι Aurigæ		9	49 33.46	− 0.72	**− 12.23**	5 52 9.20	+ 2 45.70	+ 5.7	4 49 20.52	. .	57 1 21.8	− 2.5
	28	α Aurigæ		9	8 13.31	− 0.70	**− 12.24**	352 58 6.80	+ 3 8.68	− 6.8	5 8 0.39	. .	44 7 29.9	− 2.8
	29	β Orionis		9	9 6.23	− 0.81	**− 12.26**	47 10 9.38	+ 2 45.03	+ 59.8	5 8 53.20	. .	98 20 15.4	− 3.6
	30	β Tauri		9	19 4.70	− 0.72	**− 12.25**	10 20 5.45	+ 3 1.50	+ 10.1	5 18 51.76	. .	61 29 38.3	− 3.9
7	31	Sun I, N.		9	5 58.08	− 0.73	− 12.22	16 0 2.85	+ 3 51.21	+ 15.9	7 5 45.13	+68.42	67 10 31.2	. .
9, W.	32	ξ^1 Ceti		.	. . . .	. .	. .	30 32 3.82	+ 3 15.29	+ 32.7	2 6.8	. .	81 42 13.0	− 3.1
	33	δ Ceti		9	33 43.67	− 0.67	− 14.82	39 0 11.52	+ 3 19.58	+ 44.8	2 33 28.18	− 2.04	90 10 37.1	+12.2
	34	γ^2 Ceti		9	37 28.79	− 0.68	**− 14.84**	36 4 4.62	+ 4 24.41	+ 40.3	2 37 13.29	. .	87 15 30.5	− 2.8
	35	β Ursæ Min., S. P.		9	51 18.99	+ 0.71	− 14.83	293 30 5.98	+ 4 2.86	− 2 5.4	14 51 4.87	. .	344 38 24.6	− 1.0
	36	α Ceti		9	56 24.18	− 0.68	**− 14.81**	35 12 9.32	+ 3 4.64	+ 38.9	2 56 8.67	. .	86 22 14.1	− 3.1
	37	β Persei		9	0 48.03	− 0.83	− 14.84	358 20 12.98	+ 3 26.89	− 1.5	3 0 32.36	− 2.58	49 29 59.6	− 1.8
	38	Moon II, N.		9	17 37.02	− 0.72	− 14.85	20 6 6.80	+ 3 0.03	+ 20.2	3 17 21.45	−69.09	71 15 47.2	. .
	39	δ Persei		.	. . . .	. .	. .	351 26 7.68	+ 3 11.15	− 8.2	3 34.6	. .	42 35 31.8	− 1.4
	40	η Tauri		9	40 45.98	− 0.74	**− 14.86**	15 6 6.18	+ 2 53.22	+ 14.9	3 40 30.38	. .	66 15 35.5	− 3.0
	41	ζ Persei		9	47 0.84	− 0.77	**− 14.87**	7 18 10.00	+ 3 26.61	+ 7.1	3 46 45.20	. .	58 28 4.9	− 1.9
E.	42	γ Tauri		9	13 22.13	− 0.70	**− 14.84**	23 30 12.45	+ 2 28.78	+ 23.8	4 13 6.59	. .	74 39 26.2	− 3.1
	43	ε Tauri		9	22 1.06	− 0.73	**− 14.84**	19 54 3.12	+ 4 9.48	+ 19.9	4 21 45.48	. .	71 4 53.7	− 3.7
	44	α Tauri		9	29 26.39	− 0.71	**− 14.86**	22 34 5.45	+ 2 52.21	+ 22.7	4 29 10.83	. .	73 43 41.6	− 3.4
	45	ι Aurigæ		9	49 36.32	− 0.85	**− 14.88**	5 52 9.65	+ 2 44.07	+ 5.6	4 49 20.60	. .	57 1 20.5	− 3.8
	46	α Aurigæ		9	8 16.31	− 1.03	**− 14.82**	352 58 7.18	+ 3 8.43	− 6.7	5 8 0.39	. .	44 7 30.1	− 2.9
	47	β Orionis		9	9 8.73	− 0.58	**− 14.93**	47 10 10.20	+ 2 44.55	+ 58.8	5 8 53.26	. .	98 20 14.8	− 3.6
10	48	Sun I, S.		9	18 17.74	− 0.76	− 15.01	16 52 8.85	+ 4 39.44	+ 16.4	7 18 1.87	+68.33	68 3 25.9	. .
	49	Sun II, N.		9	20 34.30	− 0.76	− 15.01	16 20 10.80	+ 5 6.55	+ 15.9	7 20 18.53	−68.33	67 31 54.5	. .
	50	Venus I, N.		9	45 18.70	− 0.70	− 15.15	23 30 9.48	+ 4 52.13	+ 23.4	9 45 2.85	+ 0.47	74 41 46.2	. .

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
6	30.10	65.3	63.3
24	30.09	63.5	61.3
26	30.15	71.8	76.2
30	30.15	75.1	79.2
31	30.15	76.9	81.4
32	30.06	75.5	76.8
41	30.06	79.2	81.8
42	30.06	81.0	83.5
49	30.04	87.8	90.8

For summary of the constants of reduction see page 3.

5, 6. One bisection.
38. Three bisections.

ZENITH-POINT CORR.
1 to 25 + 52.41
26 to 31 + 52.52
32 to 41 + 50.90
42 to 50 + 49.52

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
31	− 2.4	+ 15 44.6	.	+ 15 42.2
38	− 19 38.4	+ 15 43.2	.	− 3 55.2
48	− 2.5	− 15 45.6	.	− 15 48.1
49	− 2.4	+ 15 45.7	.	+ 15 43.3
50	− 2.8	+ 6.8	.	+ 4.0

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 10, E.	1	α Leonis		9	2 22.64	− 0.69	**− 15.14**	26 18 7.75	+ 2 37.49	+ 26.5	10 2 6.79	. .	77 27 32.9	− 2.6
	2	γ¹ Leonis		9	13 45.51	− 0.74	**− 15.19**	18 24 9.42	+ 3 3.27	+ 17.9	10 13 29.60	. .	69 33 51.8	− 1.6
	3	μ¹ Bootis		9	20 20.99	− 0.84	**− 15.52**	1 2 5.45	+ 3 54.51	+ 1.0	15 20 4.69	. .	52 12 22.2	− 1.8
	4	α Cor. Bor. . . .		9	30 0.60	− 0.74	**− 15.44**	11 42 10.05	+ 4 27.03	+ 11.4	15 29 44.39	. .	62 53 9.7	− 1.2
	5	M. Z. 259, 15 . .		9	31 44.53	− 0.48	− 15.47	59 26 2.08	+ 3 42.28	+ 1 32.3	15 31 28.58	− 3.80	110 37 37.9	− 9.1
	6	α Serpentis. . . .		9	38 46.70	− 0.60	**− 15.46**	32 2 1.55	+ 3 8.96	+ 34.2	15 38 30.62	. .	83 12 5.9	− 3.1
	7	ε Serpentis. . . .		9	45 15.49	− 0.59	**− 15.50**	34 0 3.22	+ 2 55.09	+ 36.9	15 44 59.41	. .	85 9 56.4	− 2.4
	8	ζ Ursæ Minoris . .		9	48 37.81	− 2.76	− 15.49	320 42 0.32	+ 2 45.65	− 44.6	15 48 19.56	. .	11 50 22.6	− 1.6
	9	ε Cor. Bor. . . .		8	53 1.39	− 0.74	**− 15.47**	11 36 7.15	+ 4 0.16	+ 11.3	15 52 45.16	. .	62 46 39.8	− 1.9
	10	B. A. C. 5348 (R)	.	.	. . . .	. .	. .	199 56 3.12	+ 2 59.91	+ 19.9	. . . .	. .	31 6 58.3	+10.5
	11	B. A. C. 5348 .	.	5	0 0.07	− 1.23	− 15.50	339 57 59.52	+ 2 55.26	− 19.9	15 59 43.34	− 2.44	31 6 56.1	+10.5
	12	φ Herculis		9	5 22.47	− 0.94	− 15.50	353 36 3.65	+ 2 49.65	− 6.1	16 5 6.03	− 2.73	44 45 8.4	+ 9.0
	13	σ¹ Cor. Bor. . .	8	6	10 34.73	− 0.80	− 15.51	4 40 6.40	+ 3 52.08	+ 4.5	16 10 18.42	− 2.93	55 50 24.2	+ 7.3
	14	σ² Cor. Bor. . .	7	5	10 34.99	− 0.80	− 15.51	4 40 6.40	+ 3 48.54	+ 4.5	16 10 18.68	− 2.93	55 50 20.6	+ 7.3
	15	Gould Z. C. 1157	.	9	17 19.74	− 0.40	− 15.51	79 10 7.75	+ 1 11.41	+ 4 37.3	16 17 3.83	− 4.83	130 22 17.7	− 9.3
	16	Gould Z. C. 1206	.	5	18 0.45	− 0.40	− 15.52	79 10 7.75	+ 3 25.22	+ 4 38.2	16 17 44.53	− 4.83	130 24 32.4	− 9.2
	17	Gould Z. C. 1244	.	5	18 30.95	− 0.40	− 15.52	79 10 7.75	+ 4 18.87	+ 4 38.6	16 18 15.03	− 4.84	130 25 26.4	− 9.2
	18	Anonymous . .	10	9	37 5.93	− 0.51	− 15.53	52 46 5.60	+ 1 17.01	+ 1 12.0	16 36 49.89	− 3.93	103 54 55.8	− 1.3
	19	Anonymous . .	8	8	37 28.89	− 0.51	− 15.53	52 46 5.60	+ 1 55.54	+ 1 12.0	16 37 12.85	− 3.94	103 55 34.3	− 1.3
	20	B. A. C. 5629 .	.	9	40 53.36	− 1.15	− 15.54	342 56 1.60	+ 3 14.63	− 16.8	16 40 36.67	− 2.75	34 5 20.6	+11.0
	21	Herschel IV, 50.	.	9	43 59.81	− 0.98	− 15.54	351 6 1.28	+ 3 19.62	− 8.5	16 43 43.29	− 2.89	42 15 33.6	+10.3
	22	B. A. C. 5653 .	.	9	45 51.28	− 0.44	− 15.54	70 28 3.28	+ 3 53.85	+ 2 33.6	16 45 35.30	− 4.55	121 40 51.9	− 4.2
	23	Piazzi 218 . .	.	9	48 44.22	− 0.41	− 15.54	79 22 8.00	+ 4 50.16	+ 4 44.6	16 48 28.27	− 5.00	130 38 4.0	− 5.6
	24	Piazzi 244 . .	6.5	9	52 18.99	− 0.50	− 15.55	53 28 3.90	+ 5 31.34	+ 1 14.1	16 52 2.94	− 4.01	104 41 10.5	0.0
	25	Anonymous . .	10.8	8	53 42.01	− 0.50	− 15.55	53 28 3.90	+ 3 50.99	+ 1 14.1	16 53 25.96	− 4.01	104 39 30.2	+ 0.1
	26	B. A. C. 5729 .	.	3	56 16.82	− 0.42	− 15.55	76 26 7.68	+ 4 19.17	+ 3 43.9	16 56 0.85	− 4.88	127 40 31.9	− 4.1
	27	B. A. C. 5762 .	.	9	0 29.91	− 0.44	− 15.55	69 42 10.20	+ 4 3.92	+ 2 27.6	17 0 13.92	− 4.58	120 55 2.9	− 2.4
	28	Weisse (2) 1844	.	8	1 38.10	− 0.70	− 15.55	16 34 4.00	+ 4 27.25	+ 16.4	17 1 21.85	− 3.31	67 45 8.8	+ 7.5
	29	B. A. C. 5807 .	.	9	8 26.00	− 0.43	− 15.56	72 22 4.15	+ 4 44.10	+ 2 51.4	17 8 10.01	− 4.72	123 36 0.8	− 1.9
	30	B. A. C. 5818 .	.	9	9 42.03	− 0.44	− 15.56	69 0 4.72	+ 4 15.41	+ 2 22.3	17 9 26.03	− 4.58	120 13 3.6	− 1.2
	31	B. VI+53°, 1937	.	9	19 32.12	− 1.09	− 15.57	345 18 12.20	+ 3 29.79	− 14.3	17 19 15.46	− 3.00	36 27 48.9	+11.5
	32	D. M. −0°, 3298	.	9	24 19.90	− 0.56	− 15.57	39 46 4.10	+ 3 18.58	+ 45.8	17 24 3.57	− 3.78	90 56 29.7	+ 5.2
	33	B. A. C. 5910 .	.	8	24 39.30	− 0.56	− 15.57	39 46 4.10	+ 4 31.60	+ 45.8	17 24 23.17	− 3.78	90 57 42.7	+ 5.2
	34	Weisse (2) 813 .	.	9	28 34.86	− 0.68	− 15.58	19 28 2.68	+ 4 30.94	+ 19.5	17 28 18.60	− 3.44	70 39 14.3	+ 8.4
	35	B. A. C. 5970 .	.	9	34 40.60	− 0.41	− 15.58	77 42 8.92	+ 5 25.27	+ 4 7.5	17 34 24.61	− 5.06	128 58 2.9	+ 0.5
	36	B. A. C. 5980 .	.	9	36 12.70	− 0.43	− 15.58	71 22 9.80	+ 5 1.44	+ 2 42.0	17 35 56.69	− 4.75	122 36 14.4	+ 1.5
	37	B. A. C. 6004 .	.	9	39 41.10	− 0.41	− 15.59	78 50 7.62	+ 3 45.23	+ 4 31.4	17 39 25.10	− 5.14	130 4 45.4	+ 0.9
	38	B. A. C. 6019 .	.	9	42 17.07	− 0.41	− 15.59	78 50 7.62	+ 2 0.20	+ 4 30.8	17 42 1.07	− 5.14	130 2 59.8	+ 1.3
	39	B. A. C. 6031 .	.	9	44 50.11	− 0.43	− 15.59	73 10 3.82	+ 3 33.58	+ 2 59.9	17 44 34.09	− 4.85	124 22 58.5	+ 2.3
	40	B. A. C. 6046 .	.	9	46 57.13	− 0.43	− 15.59	73 10 3.82	+ 6 55.20	+ 3 0.5	17 46 41.11	− 4.85	124 26 20.7	+ 2.6
	41	B. A. C. 6058 .	.	9	49 27.03	− 0.43	− 15.60	71 26 4.85	+ 4 55.13	+ 2 42.6	17 49 11.00	− 4.78	122 40 3.8	+ 3.1
	42	B. A. C. 6076 .	.	9	52 30.57	− 0.43	− 15.60	72 10 6.80	+ 4 26.50	+ 2 49.6	17 52 14.54	− 4.81	123 23 44.1	+ 3.4
	43	B. A. C. 6095 .	.	9	54 43.21	− 0.91	− 15.60	355 24 2.82	+ 3 46.36	− 4.4	17 54 26.70	− 3.26	46 34 6.0	+11.4
	44	B. A. C. 6131 .	8	9	1 41.79	− 0.44	− 15.60	69 56 4.35	+ 5 26.49	+ 2 29.8	18 1 25.75	− 4.73	121 10 21.8	+ 4.7
	45	B. A. C. 6144 .	.	9	2 41.89	− 0.43	− 15.61	70 56 . .	. . . .	. .	18 2 25.85	− 4.77	122 10 . .	. .
	46	B. A. C. 6166 .	.	9	6 17.07	− 0.44	− 15.61	70 46 2.70	+ 4 35.38	+ 2 36.7	18 6 1.02	− 4.77	121 59 36.0	+ 5.2
	47	B. A. C. 6182 .	.	9	9 0.89	− 0.44	− 15.61	70 8 5.15	+ 4 18.92	+ 2 31.4	18 8 44.84	− 4.74	121 21 16.7	+ 5.5
	48	B. A. C. 6188 .	.	8	9 58.30	− 0.44	− 15.61	70 8 5.15	+ 3 5.32	+ 2 31.2	18 9 42.25	− 4.74	121 20 2.9	+ 5.7
	49	XVIII, 8 . .	8.2	9	12 32.48	− 0.41	− 15.62	79 4 5.98	+ 4 0.09	+ 4 37.6	18 12 16.45	− 5.19	130 19 4.9	+ 5.1
	50	Anonymous . . .	9.5	9	15 26.65	− 0.49	− 15.62	56 2 4.88	+ 4 13.50	+ 1 21.7	18 15 10.54	− 4.26	107 14 1.3	+ 7.6

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
2	30.00	90.0	93.0
3	29.96	84.0	83.0
29	29.95	81.2	79.2

For summary of the constants of reduction see page 3.

15, 16, 17, 25. One bisection.

ZENITH-POINT CORR.

″

1 to 2 + 49.52

3 to 50 + 50.17

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 10, E.	1	B. A. C. 6244		9	18 35.59	− 0.44	− 15.62	70 36 2.02	+ 3 57.64	+ 2 35.2	18 18 19.53	− 4.77	121 48 56.1	+ 6.6
	2	B. A. C. 6254		9	20 6.10	− 0.43	− 15.62	72 18 4.18	+ 1 20.03	+ 2 50.5	18 19 50.05	− 4.84	123 28 35.9	+ 6.6
	3	B. A. C. 6274		9	22 36.37	− 0.43	− 15.63	72 18 4.18	+ 6 48.16	+ 2 51.4	18 22 20.31	− 4.84	123 34 4.9	+ 6.9
	4	Anonymous		9	26 49.19	− 0.41	− 15.63	76 46 3.48	+ 2 6.00	+ 3 49.5	18 26 33.15	− 5.06	127 58 20.2	+ 7.1
	5	Tr. Z. 47, 24		9	27 39.69	− 0.41	− 15.63	76 46 3.48	+ 3 28.45	+ 3 49.9	18 27 23.65	− 5.06	127 59 43.0	+ 7.2
	6	Anonymous		8	28 10.16	− 0.41	− 15.63	76 46 3.48	+ 2 13.82	+ 3 49.5	18 27 54.12	− 5.06	127 58 28.0	+ 7.2
	7	Antiope		9	32 40.65	− 0.46	− 15.63	63 56 1.28	+ 1 34.72	+ 1 52.0	18 32 24.56	. .	115 5 49.2	− 4.8
	8	B. A. C. 6359		9	36 2.41	− 0.41	− 15.64	77 12 8.45	+ 3 32.69	+ 3 57.8	18 35 46.36	− 5.08	128 26 0.1	+ 8.2
	9	51 Cephei, S. P.		8	44 47.28	+10.04	− 15.64	306 4 3.88	+ 4 16.51	− 1 15.2	6 44 41.68	. .	357 13 26.4	− 0.5
	10	B. A. C. 6435		9	47 44.09	− 0.42	− 15.65	76 16 1.82	+ 5 42.69	+ 3 42.2	18 47 28.02	− 5.02	127 31 47.9	+ 9.6
	11	B. A. C. 6444		9	49 1.32	− 0.42	− 15.65	76 16 1.82	+ 3 18.24	+ 3 41.6	18 48 45.25	− 5.02	127 29 22.9	+ 9.8
	12	B. A. C. 6458		9	51 6.83	− 0.42	− 15.65	76 0 10.75	+ 5 14.16	+ 3 37.9	18 50 50.76	− 5.00	127 15 24.0	+10.0
	13	B. A. C. 6511		9	58 47.42	− 0.42	− 15.65	76 0 10.75	+ 3 32.10	+ 3 37.6	18 58 31.35	− 4.99	127 13 41.7	+11.0
	14	ζ Aquilæ		9	0 19.20	− 0.64	**− 15.64**	25 8 3.55	+ 3 34.88	+ 25.9	19 0 2.90	. .	76 18 25.5	− 1.8
	15	Pomona		5	1 56.54	− 0.50	− 15.66	53 16 3.50	+ 1 55.67	+ 1 13.7	19 1 40.38	. .	104 25 34.1	− 4.5
	16	*d* Sagittarii		9	11 4.31	− 0.48	**− 15.69**	57 58 8.92	+ 3 28.48	+ 1 28.0	19 10 48.16	. .	109 9 26.6	− 2.3
	17	B. A. C. 6594		9	13 11.62	− 0.44	− 15.67	70 50 7.90	+ 2 40.70	+ 2 37.3	19 12 55.51	− 4.73	122 1 47.1	+12.7
	18	δ Aquilæ		9	19 53.04	− 0.58	**− 15.66**	35 56 4.08	+ 3 49.05	+ 40.0	19 19 36.78	. .	87 6 54.3	− 2.4
	19	B. A. C. 6690 (R)		.	. . . .	. .	. .	168 46 9.22	+ 3 21.65	− 10.9	. . . .	. .	62 17 1.2	+12.8
	20	B. A. C. 6690		.	. . . .	. .	. .	11 8 4.18	+ 2 22.28	+ 10.9	19 26.0	. .	62 16 58.6	+12.8
	21	κ Aquilæ		9	30 52.82	− 0.53	**− 15.70**	46 6 5.48	+ 3 38.65	+ 57.3	19 30 36.61	. .	97 17 2.6	− 2.3
	22	B. A. C. 6753		9	38 16.64	− 0.44	− 15.69	69 58 3.90	+ 3 52.20	+ 2 30.3	19 38 0.51	− 4.64	121 10 47.6	+15.4
	23	λ Ursæ Minoris		4	43 19.15	−27.78	− 15.70	309 54 2.82	+ 3 36.06	− 1 5.7	19 42 35.67	. .	1 2 54.4	− 2.3
	24	Juno		9	49 15.42	− 0.55	− 15.70	43 6 10.62	+ 2 45.71	+ 51.7	19 48 59.17	. .	94 16 9.2	− 3.2
11, S.	25	η Herculis		9	39 11.87	− 0.81	**− 17.04**	359 40 8.92	+ 4 28.40	− 0.2	16 38 54.05	. .	50 50 58.3	− 1.9
	26	B. A. C. 5639		9	44 38.21	− 0.07	− 17.01	79 16 4.25	+ 4 10.27	+ 4 42.9	16 44 21.13	− 4.98	130 31 18.6	− 6.1
	27	XVI, 23	8	9	55 20.11	− 0.11	− 17.03	75 28 2.85	+ 3 27.46	+ 3 29.6	16 55 2.97	− 4.82	126 41 21.1	− 4.1
	28	Weisse (2) 1844		9	1 39.44	− 0.58	− 17.04	16 34 1.20	+ 4 29.59	+ 16.5	17 1 21.82	− 3.31	67 45 8.5	+ 7.7
	29	B. A. C. 5807		9	8 27.27	− 0.13	− 17.05	72 24 3.25	+ 2 44.96	+ 2 52.1	17 8 10.09	− 4.72	123 36 1.5	− 1.9
	30	Weisse 143		9	10 53.67	− 0.40	− 17.05	37 27 58.10	+ 4 15.19	+ 42.3	17 10 36.22	− 3.70	88 39 16.8	+ 4.7
	31	*b* Ophiuchi		9	19 31.53	− 0.20	**− 17.07**	62 52 3.75	+ 3 38.34	+ 1 47.4	17 19 14.27	. .	114 3 50.7	− 3.4
	32	B. A. C. 5914		9	25 43.76	− 0.14	− 17.07	71 44 2.98	+ 4 57.95	+ 2 46.1	17 25 26.55	− 4.75	122 58 8.2	+ 0.2
	33	Weisse (2) 813		9	28 36.19	− 0.56	− 17.07	19 27 57.15	+ 4 35.19	+ 19.6	17 28 18.56	− 3.44	70 39 13.1	+ 8.6
	34	Weisse (2) 1334		9	42 19.08	− 0.80	− 17.09	359 53 55.82	+ 3 48.08	0.0	17 42 1.19	− 3.24	51 4 5.1	+11.2
	35	Weisse (2) 1438		9	46 9.46	− 0.67	− 17.09	9 28 5.72	+ 3 55.19	+ 9.3	17 45 51.70	− 3.36	60 38 31.4	+10.5
	36	B. A. C. 6058		9	49 28.11	− 0.14	− 17.10	71 26 9.32	+ 4 48.45	+ 2 43.4	17 49 10.87	− 4.78	122 40 2.4	+ 3.1
	37	B. A. C. 6095		9	54 44.51	− 0.89	− 17.10	355 24 3.48	+ 3 44.29	− 4.4	17 54 26.52	− 3.25	46 34 4.6	+11.7
	38	γ^2 Sagittarii		9	58 35.60	− 0.16	**− 17.06**	69 12 2.65	+ 4 30.95	+ 2 24.7	17 58 18.34	. .	120 25 19.5	− 2.5
	39	B. A. C. 6150 (R)		.	. . . .	. .	. .	169 48 5.42	+ 3 26.49	− 9.9	. . . .	. .	61 14 59.2	+11.0
	40	B. A. C. 6150		.	. . . .	. .	. .	10 6 9.90	+ 2 15.55	+ 9.9	18 3.0	. .	61 14 56.5	+11.0
	41	B. A. C. 6182		9	9 2.17	− 0.15	− 17.12	70 8 7.80	+ 4 11.86	+ 2 32.1	18 8 44.90	− 4.75	121 21 13.0	+ 5.5
	42	B. A. C. 6188		9	9 59.70	− 0.15	− 17.12	70 8 7.80	+ 2 56.96	+ 2 32.0	18 9 42.43	− 4.75	121 19 58.0	+ 5.6
	43	XVIII, 9	7.5	9	13 6.30	− 0.21	− 17.13	62 10 4.55	+ 3 23.23	+ 1 44.5	18 12 48.96	− 4.45	113 21 33.5	+ 6.8
	44	B. A. C. 6226		9	15 53.04	− 0.11	− 17.13	75 4 5.45	+ 3 39.64	+ 3 24.6	18 15 35.80	− 4.98	126 17 30.9	+ 5.8
	45	B. A. C. 6244		9	18 36.82	− 0.14	− 17.13	70 36 8.80	+ 3 49.93	+ 2 36.1	18 18 19.55	− 4.78	121 48 56.0	+ 6.6
	46	B. A. C. 6275		5	22 38.83	− 0.14	− 17.14	71 50 11.88	+ 7 49.28	+ 2 47.9	18 22 21.55	− 4.83	123 7 10.3	+ 7.0
	47	B. A. C. 6285		5	23 42.43	− 0.14	− 17.14	71 50 11.88	+ 4 25.01	+ 2 47.4	18 23 25.15	− 4.83	123 3 45.5	+ 7.1
	48	Piazzi 87		5	25 1.37	− 0.14	− 17.14	71 50 11.88	+ 1 43.93	+ 2 47.0	18 24 44.09	− 4.83	123 1 4.0	+ 7.2
	49	B. A. C. 6305		9	26 35.36	− 0.14	− 17.14	71 50 11.88	+ 6 38.69	+ 2 47.8	18 26 18.08	− 4.83	123 5 59.6	+ 7.4
	50	B. A. C. 6308		7	26 42.88	− 0.14	− 17.14	71 50 11.88	+ 3 22.45	+ 2 47.3	18 26 25.60	− 4.83	123 2 42.8	+ 7.4

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
24	29.92	78.4	76.3	ZENITH-POINT CORR.					
26	29.96	79.4	77.8	″					
				6, 15. One bisection. 1 to 24 + 50.17					
				9. Three bisections. 25 to 50 + 50.51					

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
July					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
11, S.	1	B. A. C. 6317		9	28 4.71	− 0.14	− 17.15	71 50 11.88	− 0 38.61	+ 2 46.6	18 27 47.42	− 4.83	122 58 41.1	+ 7.6
	2	B. A. C. 6344		9	32 8.39	− 0.14	− 17.15	71 50 11.88	+ 6 14.20	+ 2 47.8	18 31 51.10	− 4.84	123 5 35.1	+ 8.1
	3	B. A. C. 6364		9	36 6.16	− 0.84	− 17.16	358 0 7.60	+ 3 39.47	− 1.9	18 35 48.16	− 3.42	49 10 6.4	+12.2
	4	B. A. C. 6417		5	39 20.28	− 5.79	− 17.16	315 34 3.78	+ 3 30.41	− 54.1	18 38 57.33	− 5.19	6 43 1.3	+11.5
	5	51 Cephei, S. P.		5	44 45.32	+13.44	− 17.17	306 4 1.30	+ 4 19.30	− 1 15.7	6 44 41.59	. .	357 13 26.1	− 0.5
	6	Anonymous	10	9	49 35.27	− 0.17	− 17.17	67 44 5.55	+ 4 20.92	+ 2 14.7	18 49 17.93	− 4.66	118 57 2.4	+10.3
	7	M. Z. 47, 23		9	51 8.93	− 0.17	− 17.18	67 44 5.55	+ 1 32.97	+ 2 14.5	18 50 51.58	− 4.65	118 54 14.2	+10.5
	8	O. Arg. N. 18836		8	56 16.60	− 1.64	− 17.18	333 44 1.65	+ 3 52.73	− 27.3	18 55 57.78	− 3.62	24 53 48.3	+11.8
	9	B. A. C. 6520		7	58 27.61	− 0.96	− 17.18	352 4 6.28	+ 3 21.54	− 7.7	18 58 9.47	− 3.48	43 13 41.3	+12.3
	10	B. A. C. 6535		9	1 48.99	− 0.09	− 17.19	76 52 10.60	+ 2 34.48	+ 3 53.1	19 1 31.71	− 5.04	128 4 59.4	+11.2
	11	*d* Sagittarii		9	11 5.63	− 0.24	**− 17.24**	57 58 6.80	+ 3 29.20	+ 1 28.6	19 10 48.19	. .	109 9 25.8	− 3.1
	12	Lalande 36409		9	13 39.73	− 0.81	− 17.20	359 54 5.38	+ 4 43.23	0.0	19 13 21.72	− 3.54	51 5 9.8	+12.5
	13	δ Aquilæ		9	19 54.44	− 0.41	**− 17.22**	35 56 4.98	+ 3 45.95	+ 40.3	19 19 36.82	. .	87 6 52.4	− 4.1
	14	κ Aquilæ		9	30 54.22	− 0.33	**− 17.29**	46 6 6.52	+ 3 36.14	+ 57.7	19 30 36.67	. .	97 17 1.6	− 3.2
	15	δ Cygni (R)		.	. . . .	. .	. .	185 54 4.38	+ 2 59.44	+ 5.8	. . . .	. .	45 9 11.6	+12.3
	16	δ Cygni		8	41 39.01	− 0.92	− 17.24	354 0 13.20	+ 2 40.30	− 5.8	19 41 20.85	− 3.61	45 9 8.9	+12.3
	17	α Aquilæ		9	45 22.99	− 0.45	**− 17.17**	30 16 8.60	+ 3 12.41	+ 32.5	19 45 5.30	. .	81 26 14.7	− 3.2
	18	β Aquilæ		9	49 52.48	− 0.43	**− 17.20**	32 42 9.75	+ 3 48.47	+ 35.7	19 49 34.80	. .	83 52 55.1	− 3.7
R.	19	α Aurigæ		8	8 19.08	− 1.02	**− 17.54**	352 58 6.12	+ 3 11.77	− 6.7	5 8 0.53	. .	44 7 32.4	− 0.8
	20	β Orionis		9	9 11.26	− 0.49	**− 17.51**	47 10 11.15	+ 2 44.17	+ 58.8	5 8 53.24	. .	98 20 15.3	− 2.8
	21	β Tauri		9	19 10.18	− 0.77	**− 17.56**	10 20 8.88	+ 3 0.22	+ 10.0	5 18 51.87	. .	61 29 40.3	− 1.9
	22	δ Orionis		9	26 18.21	− 0.54	**− 17.61**	39 12 6.85	+ 4 0.53	+ 44.5	5 26 0.12	. .	90 23 13.1	− 2.7
	23	α Columbæ		3	35 40.77	− 0.34	**− 17.49**	72 56 . .	. . .	. .	5 35 22.87	. .	124 8 . .	. .
	24	α Orionis		9	49 6.63	− 0.59	**− 17.57**	31 26 4.75	+ 4 0.31	+ 33.3	5 48 48.47	. .	82 36 59.6	− 1.7
12	25	Sun I, N.		9	26 29.69	− 0.70	− 17.66	16 38 11.45	+ 3 18.24	+ 16.2	7 26 11.33	+68.13	67 48 7.1	. .
	26	Sun II, S.		9	28 45.95	− 0.70	− 17.66	17 10 5.10	+ 2 54.57	+ 16.7	7 28 27.59	−68.13	68 19 37.6	. .
	27	α Hydræ		8	22 6.94	− 0.49	**− 17.77**	46 58 5.48	+ 3 40.37	+ 57.8	9 21 48.68	. .	98 9 4.8	− 2.5
	28	γ^1 Leonis		9	13 48.08	− 0.69	**− 17.82**	18 23 58.25	+ 3 13.96	+ 18.0	10 13 29.57	. .	69 33 51.4	− 2.1
W.	29	ι Aurigæ		9	49 40.56	− 0.73	**− 19.15**	5 52 13.32	+ 2 40.74	+ 5.7	4 49 20.70	. .	57 1 21.0	− 3.3
	30	α Aurigæ		9	8 20.77	− 0.88	− 19.13	352 58 9.55	+ 3 5.99	− 6.7	5 8 0.76	. .	44 7 30.0	− 3.2
	31	β Orionis		9	9 13.00	− 0.49	− 19.13	47 10 11.02	+ 2 43.34	+ 59.3	5 8 53.38	. .	98 20 14.9	− 3.0
	32	β Tauri		9	19 11.68	− 0.69	**− 19.12**	10 20 15.58	+ 2 52.64	+ 10.1	5 18 51.86	. .	61 29 39.5	− 2.7
	33	δ Orionis		9	26 19.73	− 0.53	**− 19.12**	39 12 . .	. . .	. .	5 26 0.07	. .	90 23 . .	. .
	34	α Leporis		9	27 52.09	− 0.46	**− 19.11**	56 42 8.52	+ 4 28.69	+ 1 23.6	5 27 32.50	. .	107 54 22.0	− 3.4
	35	ε Orionis		6	30 34.60	− 0.52	**− 19.17**	40 6 13.20	+ 3 19.26	+ 46.3	5 30 14.95	. .	91 16 40.0	− 2.7
	36	Moon II.		9	10 35.96	− 0.63	− 19.13	18 30 . .	. . .	. .	6 10 16.20	−67.86	69 23 . .	. .
13	37	Sun I, N.		9	30 35.42	− 0.64	− 19.13	16 46 4.65	+ 4 2.78	+ 16.5	7 30 15.65	+67.98	67 56 45.1	. .
	38	Sun II, S.		9	32 51.39	− 0.64	− 19.13	17 18 5.20	+ 3 33.84	+ 17.1	7 32 31.62	−67.99	68 28 17.3	. .
14, S.	39	ι Aurigæ		9	49 41.82	− 0.67	**− 20.42**	5 52 2.48	+ 2 52.47	+ 5.8	4 49 20.72	. .	57 1 22.0	− 2.3
	40	α Aurigæ		9	8 21.87	− 0.77	**− 20.48**	352 58 5.75	+ 3 10.65	− 6.8	5 8 0.66	. .	44 7 30.8	− 2.6
	41	β Tauri		9	19 12.99	− 0.65	**− 20.42**	10 20 1.90	+ 3 6.20	+ 10.2	5 18 51.89	. .	61 29 39.5	− 2.7
	42	δ Orionis		9	26 21.18	− 0.56	**− 20.49**	39 12 3.78	+ 4 1.16	+ 45.6	5 26 0.17	. .	90 23 11.7	− 3.7
	43	α Orionis		9	49 9.53	− 0.58	**− 20.43**	31 25 58.98	+ 4 4.36	+ 34.2	5 48 48.48	. .	82 36 58.7	− 2.4
15	44	Sun I, N.		9	38 43.20	− 0.62	− 20.53	17 4 1.58	+ 4 33.96	+ 17.1	7 38 22.05	+67.88	68 15 13.8	. .
	45	Sun II, S.		9	40 58.97	− 0.62	− 20.53	17 36 2.35	+ 4 2.35	+ 17.6	7 40 37.82	−67.89	68 46 43.5	. .
	46	α Leonis		9	2 28.00	− 0.59	**− 20.61**	26 18 2.50	+ 2 43.31	+ 27.3	10 2 6.80	. .	77 27 34.3	− 1.1
	47	Venus I, S.		9	8 7.17	− 0.59	− 20.61	25 38 0.08	+ 4 44.56	+ 26.5	10 7 45.97	+ 0.48	76 49 32.3	. .
	48	Venus N.		.	. . . .	. .	. .	25 38 0.08	+ 4 29.90	+ 26.5	. . . .	. .	75 49 17.7	. .
	49	M. Z. 259, 15	6	9	31 49.74	− 0.53	− 20.72	59 25 59.02	+ 3 43.43	+ 1 34.4	15 31 28.49	− 3.79	110 37 38.0	− 9.0
	50	α Serpentis		9	38 51.88	− 0.58	**− 20.71**	32 2 0.45	+ 3 7.72	+ 35.0	15 38 30.57	. .	83 12 4.4	− 4.1

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
18	29.96	76.0	73.5
20	30.01	80.9	84.7
24	30.01	83.0	86.1
26	29.99	85.0	88.8
28	29.95	88.8	89.5
29	29.96	76.8	78.2
35	29.96	78.3	79.6
38	29.96	81.0	81.5
39	30.25	73.3	74.2
45	30.25	78.7	80.4
47	30.24	83.2	82.8
49	30.25	76.8	75.9

For summary of the constants of reduction see page 3.

5. Three bisections.

ZENITH-POINT CORR.

″

1 to 18 + 50.51

19 to 28 + 49.26

29 to 38 + 49.71

39 to 48 + 51.28

49 to 50 + 51.26

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
25	− 2.5	+ 15 45.2	.	+ 15 42.7
26	− 2.6	− 15 45.2	.	− 15 47.8
37	− 2.5	+ 15 46.0	.	+ 15 43.5
38	− 2.6	− 15 46.1	.	− 15 48.7
44	− 2.5	+ 15 44.8	.	+ 15 42.3
45	− 2.6	− 15 44.8	.	− 15 47.4
47	− 3.1	− 7.4	+ 0.3	− 10.2
48	− 3.1	+ 7.4	.	+ 4.3

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 15, S.	1	ε Serpentis		9	45 20.64	− 0.57	**− 20.72**	34 0 3.72	+ 2 51.74	+ 37.7	15 44 59.34	. .	85 9 54.4	− 3.9
	2	δ Scorpii		9	53 46.68	− 0.53	**− 20.75**	61 6 1.20	+ 3 5.59	+ 1 41.1	15 53 25.42	. .	112 17 9.1	− 3.1
	3	φ Herculis (R)			. . . .	. .	. .	186 18 1.92	+ 3 4.25	+ 6.2	. . . .	. .	44 45 8.8	+ 9.9
	4	φ Herculis			. . . .	. .	. .	353 36 0.68	+ 2 51.35	− 6.2	16 5.0	. .	44 45 7.0	+ 9.9
	5	B. A. C. 5639		9	44 42.32	− 0.52	− 20.74	79 16 6.25	+ 4 3.09	+ 4 48.3	16 44 21.06	− 4.98	130 31 18.8	− 6.5
	6	Piazzi 218		9	48 49.61	− 0.52	− 20.74	79 22 4.75	+ 4 44.88	+ 4 51.3	16 48 28.35	− 5.01	130 38 2.1	− 6.0
	7	B. A. C. 5729		9	56 22.21	− 0.52	− 20.74	76 26 4.05	+ 4 14.27	+ 3 49.2	16 56 0.95	− 4.88	127 40 28.7	− 4.5
	8	B. A. C. 5735		9	57 29.54	− 0.52	− 20.74	72 43 59.22	+ 4 0.54	+ 2 59.1	16 57 8.28	− 4.71	123 57 20.1	− 3.6
	9	B. A. C. 5807		9	8 31.22	− 0.52	− 20.74	72 22 3.58	+ 4 40.96	+ 2 55.5	17 8 9.96	− 4.74	123 36 1.2	− 2.2
	10	B. A. C. 5818		9	9 47.36	− 0.52	− 20.74	69 0 2.82	+ 4 12.44	+ 2 25.7	17 9 26.10	− 4.60	120 13 2.2	− 1.4
	11	δ Ophiuchi		9	19 35.59	− 0.53	− 20.75	62 52 0.95	+ 3 39.83	+ 1 49.5	17 19 14.31	. .	114 3 51.5	− 2.7
	12	B. A. C. 5914		9	25 47.68	− 0.52	− 20.75	71 44 2.35	+ 4 53.79	+ 2 49.3	17 25 26.41	− 4.77	122 58 6.6	0.0
	13	Weisse (2) 813		9	28 39.97	− 0.61	− 20.75	19 27 58.42	+ 4 33.30	+ 20.0	17 28 18.61	− 3.44	70 39 12.9	+ 9.4
	14	B. A. C. 5972		9	32 50.94	− 1.19	− 20.75	330 38 0.85	+ 3 16.08	− 31.6	17 32 29.00	− 2.87	21 47 6.5	+13.5
	15	B. A. C. 5980		9	36 18.03	− 0.52	− 20.75	71 23 58.95	+ 3 6.59	+ 2 46.0	17 35 56.76	− 4.78	122 36 12.7	+ 1.3
	16	B. A. C. 6004		9	39 46.32	− 0.52	− 20.75	78 50 6.38	+ 3 36.90	+ 4 38.4	17 39 25.05	− 5.17	130 4 42.9	+ 0.5
	17	B. A. C. 6019		9	42 22.36	− 0.52	− 20.75	78 50 6.02	+ 1 54.59	+ 4 37.7	17 42 1.09	− 5.17	130 2 59.5	+ 0.8
	18	B. A. C. 6031		9	44 55.28	− 0.52	− 20.75	73 10 5.55	+ 3 23.64	+ 3 4.4	17 44 34.01	− 4.88	124 22 54.8	+ 2.0
	19	B. A. C. 6046		9	47 2.48	− 0.52	− 20.75	73 10 5.55	+ 6 45.01	+ 3 5.1	17 46 41.21	− 4.89	124 26 16.9	+ 2.3
	20	B. A. C. 6057		9	48 59.28	− 0.52	− 20.75	71 14 4.82	+ 3 54.74	+ 2 44.7	17 48 38.01	− 4.80	122 27 5.5	+ 2.8
	21	Weisse (2) 1941		9	1 51.01	− 0.67	− 20.75	6 36 2.85	+ 4 0.17	+ 6.6	18 1 29.59	− 3.38	57 46 30.8	+12.2
	22	Weisse (2) 44		8	3 24.51	− 0.70	− 20.75	2 24 2.82	+ 4 55.94	+ 2.4	18 3 3.06	− 3.34	53 35 22.4	+12.5
	23	Weisse (2) 76		9	4 21.60	− 0.70	− 20.76	2 24 2.82	+ 5 54.34	+ 2.5	18 4 0.14	− 3.35	53 36 20.9	+12.6
	24	Weisse (2) 137		9	6 17.46	− 0.70	− 20.76	2 24 2.82	+ 2 43.55	+ 2.4	18 5 56.00	− 3.35	53 33 10.0	+12.6
	25	B. A. C. 6182		9	9 6.26	− 0.52	− 20.76	70 8 7.68	+ 4 11.73	+ 2 35.2	18 8 44.98	− 4.79	121 21 15.8	+ 5.3
	26	B. A. C. 6188		9	10 3.70	− 0.52	− 20.76	70 8 7.68	+ 2 56.92	+ 2 35.1	18 9 42.42	− 4.79	121 20 0.9	+ 5.4
	27	B. A. C. 6211		9	14 5.41	− 0.52	− 20.76	69 46 1.58	+ 4 22.97	+ 2 32.3	18 13 44.13	− 4.78	120 59 18.1	+ 6.0
	28	B. A. C. 6231		9	15 43.40	− 0.62	− 20.76	16 54 1.92	+ 4 21.11	+ 17.2	18 15 22.02	− 3.55	68 5 1.4	+11.9
	29	B. A. C. 6244		8	18 40.84	− 0.52	− 20.76	70 36 5.50	+ 3 49.17	+ 2 39.2	18 18 19.56	− 4.82	121 48 55.1	+ 6.4
	30	B. A. C. 6259		9	20 43.66	− 0.52	− 20.76	77 48 5.42	+ 5 1.17	+ 4 16.2	18 20 22.38	− 5.17	129 3 44.0	+ 5.8
	31	B. A. C. 6302		8	23 36.60	− 1.41	− 20.76	326 10 1.08	+ 3 5.94	− 37.7	18 23 14.43	− 3.46	17 18 50.5	+13.4
	32	Weisse (2) 703		9	26 14.51	− 0.60	− 20.76	21 58 3.28	+ 4 4.46	+ 22.8	18 25 53.15	− 3.64	73 8 51.7	+12.0
	33	Weisse 710		9	31 15.29	− 0.58	− 20.76	29 48 3.12	+ 2 58.67	+ 32.4	18 30 53.95	− 3.77	80 57 55.4	+11.6
	34	B. A. C. 6364		9	36 9.89	− 0.73	− 20.76	358 0 6.18	+ 3 40.20	− 1.9	18 35 48.40	− 3.43	49 10 5.7	+13.4
	35	51 Cephei, S. P.		7	44 57.09	+ 6.22	− 20.76	306 4 . .	. . . .	. .	6 44 42.55	. .	357 13 . .	. .
	36	σ Sagittarii		9	48 22.77	− 0.52	**− 20.76**	65 14 3.78	+ 3 51.27	+ 2 2.1	18 48 1.49	. .	116 26 18.3	− 2.1
	37	ζ Aquilæ		9	0 24.32	− 0.60	**− 20.77**	25 8 3.55	+ 3 32.06	+ 26.6	19 0 2.95	. .	76 18 23.4	− 2.8
20, W.	38	α Aurigæ			. . . .	. .	. .	352 58 8.78	+ 3 7.93	− 6.8	5 8.0	. .	44 7 31.1	− 2.7
	39	β Orionis			. . . .	. .	. .	47 10 15.10	+ 2 37.15	+ 59.8	5 8.9	. .	98 20 13.2	− 3.3
	40	β Tauri			. . . .	. .	. .	10 20 7.40	+ 3 0.18	+ 10.2	5 18.9	. .	61 29 39.0	− 3.2
	41	δ Orionis			. . . .	. .	. .	39 12 9.38	+ 3 55.37	+ 45.2	5 26.0	. .	90 23 11.2	− 3.4
	42	α Orionis			. . . .	. .	. .	31 26 1.85	+ 4 0.58	+ 33.9	5 48.8	. .	82 36 57.5	− 3.0
23, R.	43	α Orionis		9	49 16.21	− 0.76	**− 26.74**	31 25 56.85	+ 4 6.75	+ 33.7	5 48 48.69	. .	82 36 58.5	− 1.3
	44	μ Geminorum		6	16 18.56	− 0.77	**− 26.61**	16 16 5.65	+ 2 59.14	+ 16.1	6 15 51.02	. .	67 25 42.1	− 2.3
	45	γ Geminorum		9	31 22.99	− 0.76	**− 26.81**	22 20 9.45	+ 3 16.12	+ 22.6	6 30 55.46	. .	73 30 9.4	− 1.2
	46	α Canis Majoris		9	40 25.49	− 0.78	**− 26.82**	55 22 11.30	+ 3 30.34	+ 1 19.4	6 39 57.93	. .	106 33 22.2	− 1.3
	47	Mercury II, C		9	53 34.60	− 0.77	− 26.78	17 12 8.15	+ 2 50.38	+ 17.0	6 53 7.05	− 0.25	68 21 36.7	. .
	48	α Canis Minoris		9	33 36.49	− 0.76	**− 26.87**	33 18 5.22	+ 3 27.00	+ 36.0	7 33 8.93	. .	84 28 29.4	− 3.3
	49	β Geminorum		7	38 34.90	− 0.78	**− 26.82**	10 32 6.85	+ 2 53.41	+ 10.2	7 38 7.32	. .	61 41 31.7	− 1.8
24	50	Sun I, N.		9	14 52.47	− 0.77	− 26.81	18 46 1.45	+ 3 5.95	+ 18.6	8 14 24.89	+67.16	69 55 47.2	. .

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	″
20	30.26	75.5	71.1	ZENITH-POINT CORR.	47	− 2.6	. . .	0.0	− . 2.6
37	30.25	71.3	69.5		50	− 2.8	+ 15 46.9	.	+ 15 44.1
39	30.18	76.7	78.7	″					
43	30.18	78.8	82.1	40, 47. Four bisections. 1 to 37 + 51.26					
47	30.17	81.3	84.0	38 to 42 + 50.41					
				43 to 50 + 51.14					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 24, R.	1	Sun II, S.	.	9	17 6.79	— 0.77	— 26.81	19 18 1.18	+ 2 39.76	+ 19.1	8 16 39.21	—67.16	70 27 21.2	. .
	2	α Hydræ	.	2	22 16.33	— 0.77	— **26.87**	46 58 3.12	+ 3 42.18	+ 58.2	9 21 48.72	. .	98 9 4.7	— 1.2
	3	ε Leonis	.	9	39 38.21	— 0.77	— **26.80**	14 30 5.32	+ 4 27.12	+ 14.1	9 39 10.59	. .	65 41 7.7	— 1.6
	4	α Leonis	.	9	2 34.38	— 0.76	— **26.84**	26 18 2.82	+ 2 42.99	+ 26.9	10 2 6.76	. .	77 27 33.9	— 1.4
	5	γ^1 Leonis	.	9	13 57.18	— 0.76	— **26.89**	18 24 5.72	+ 3 7.27	+ 18.1	10 13 29.56	. .	69 33 52.3	— 1.5
	6	Venus I, N.	.	9	47 49.23	— 0.76	— 26.87	29 48 2.98	+ 2 53.39	+ 31.1	10 47 21.60	+ 0.50	80 57 48.7	. .
	7	Venus S.	.	.	. . . .	. .	. .	29 48 2.98	+ 3 9.91	+ 31.1	. . . .	. .	80 58 5.2	. .
	8	Moon I, N.	.	9	8 32.73	— 0.77	— 27.02	57 44 3.00	+ 3 9.91	+ 1 26.7	15 8 4.94	+67.07	108 55 0.8	. .
	9	μ^1 Bootis	.	9	20 32.19	— 0.80	— **27.01**	1 2 7.68	+ 3 49.71	+ 1.1	15 20 4.37	. .	52 12 19.7	— 2.5
	10	α Cor. Bor.	.	9	30 12.06	— 0.78	— **27.06**	11 42 5.40	+ 4 28.11	+ 11.5	15 29 44.26	. .	62 53 6.2	— 2.9
	11	α Serpentis	.	9	38 58.31	— 0.76	— **27.06**	32 2 5.72	+ 3 1.62	+ 34.5	15 38 30.53	. .	83 12 3.0	— 4.6
	12	ε Serpentis	.	9	45 27.03	— 0.76	— **27.00**	34 0 6.58	+ 2 48.88	+ 37.2	15 44 59.25	. .	85 9 53.9	— 3.6
	13	ζ Ursæ Minoris	.	2	48 46.45	— 1.51	— 27.02	320 42 9.70	+ 2 33.64	— 45.0	15 48 17.92	. .	11 50 19.5	— 2.8
	14	β^1 Scorpii	.	6	59 6.17	— 0.77	— **26.97**	58 18 7.70	+ 2 56.73	+ 1 29.2	15 58 38.38	. .	109 28 54.8	— 3.9
	15	β^2 Scorpii	.	5	59 6.58	— 0.77	— 27.02	58 18 7.70	+ 2 43.31	+ 1 29.2	15 58 38.79	— 3.79	109 28 41.4	— 5.9
	16	σ^1 Cor. Bor.	7	6	10 46.07	— 0.79	— 27.02	4 40 5.60	+ 3 49.89	+ 4.6	16 10 18.26	— 2.73	55 50 21.3	+ 9.7
	17	σ^2 Cor. Bor.	6	5	10 46.29	— 0.79	— 27.02	4 40 5.60	+ 3 45.75	+ 4.6	16 10 18.48	— 2.73	55 50 17.2	+ 9.7
	18	Gould Z. C. 1157	.	6	17 31.46	— 0.83	— 27.02	79 10 12.35	+ 1 2.03	+ 4 40.3	16 17 3.61	— 4.68	130 22 15.9	—10.1
	19	Gould Z. C. 1206	.	5	18 12.25	— 0.83	— 27.02	79 10 12.35	+ 3 15.10	+ 4 41.3	16 17 44.40	— 4.69	130 24 29.9	—10.1
	20	Gould Z. C. 1244	.	6	18 42.84	— 0.83	— 27.02	79 10 12.35	+ 4 4.58	+ 4 41.6	16 18 14.99	— 4.69	130 25 19.7	—10.0
	21	A Draconis	.	9	28 43.09	— 1.10	— 27.02	329 50 8.48	+ 2 21.31	— 32.1	16 28 14.97	. .	20 58 18.9	— 2.9
	22	Anonymous	10	9	37 17.50	— 0.76	— 27.02	52 46 8.15	+ 1 10.07	+ 1 12.9	16 36 49.72	— 3.84	103 54 52.3	— 0.7
	23	Anonymous	8.7	9	37 40.56	— 0.76	— 27.02	52 46 8.15	+ 1 54.59	+ 1 12.9	16 37 12.78	— 3.84	103 55 36.8	— 0.7
	24	B. A. C. 5653	.	9	46 3.03	— 0.80	— 27.02	70 28 11.30	+ 3 43.73	+ 2 35.5	16 45 35.21	— 4.46	121 40 51.7	— 4.7
	25	Piazzi 218	.	9	48 56.04	— 0.83	— 27.02	79 22 10.82	+ 4 43.17	+ 4 48.2	16 48 28.19	— 4.90	130 38 3.4	— 6.6
	26	Stone 9266	.	9	56 14.18	— 0.80	— 27.03	70 14 5.65	+ 3 35.12	+ 2 33.7	16 55 46.35	— 4.50	121 26 35.7	— 3.5
	27	Gould Z. C. 4182	8.7	9	59 31.97	— 0.78	— 27.03	62 38 5.90	+ 3 40.79	+ 1 47.3	16 59 4.16	— 4.24	113 49 55.2	— 1.2
	28	Lalande 31378	.	9	8 19.28	— 0.88	— 27.03	346 18 7.92	+ 2 16.24	— 13.5	17 7 51.37	— 2.70	37 26 31.9	+14.7
	29	Weisse 143	.	9	11 3.91	— 0.76	— 27.03	37 28 9.40	+ 4 2.15	+ 42.8	17 10 36.12	— 3.63	88 39 15.6	+ 6.1
	30	Anonymous	11.0	9	22 40.39	— 0.79	— 27.03	69 50 5.98	+ 4 8.44	+ 2 30.8	17 22 12.57	— 4.60	121 3 6.4	— 0.4
	31	Lalande 32014	.	9	28 53.93	— 0.76	— 27.03	22 24 0.00	+ 4 54.13	+ 23.1	17 28 26.14	— 3.42	73 35 38.4	+10.5
	32	B. A. C. 5980	.	9	36 24.43	— 0.80	— 27.03	71 24 6.92	+ 2 59.05	+ 2 44.4	17 35 56.60	— 4.72	122 36 11.6	+ 0.8
	33	XVII, 17	6.2	9	41 10.06	— 0.78	— 27.03	61 14 3.95	+ 3 42.19	+ 1 41.5	17 40 42.25	— 4.35	112 25 48.8	+ 3.5
	34	B. A. C. 6032	.	9	45 11.23	— 0.80	— 27 03	70 6 9.18	+ 2 32.54	+ 2 34.3	17 44 43.40	— 4.69	121 17 37.2	+ 2.1
	35	B. A. C. 6057	.	9	49 5.58	— 0.80	— 27.03	71 14 9.38	+ 3 52.00	+ 2 43.2	17 48 37.75	— 4.75	122 27 5.8	+ 2.3
	36	B. A. C. 6150 (R)	.	.	. . . .	. .	. .	169 48 12.20	+ 3 22.74	— 10.0	. . . .	. .	61 14 56.3	+14.0
	37	B. A. C. 6150	.	.	. . . .	. .	. .	10 6 7.62	+ 2 14.92	+ 10.0	18 3.0	. .	61 14 53.7	+14.0
	38	Weisse (2) 794	.	9	28 50.59	— 0.78	— 27.03	8 22 10.45	+ 3 3.98	+ 8.3	18 28 22.78	— 3.44	59 31 43.9	+15.1
	39	M. Z. 45, 21	.	9	33 42.70	— 0.79	— 27.03	66 24 9.75	+ 5 59.09	+ 2 7.9	18 33 14.88	— 4.64	117 38 37.9	+ 8.2
	40	B. A. C. 6389	.	9	41 53.53	— 0.80	— 27.03	71 36 10.65	+ 4 51.28	+ 2 47.4	18 41 25.70	— 4.86	122 50 10.5	+ 8.4
	41	Pomona	11	9	50 7.70	— 0.76	— 27.03	53 32 11.42	+ 3 58.09	+ 1 15.9	18 49 39.91	. .	104 43 46.6	— 4.4
	42	D. M. + 20°, 4021	9.5	6	56 45.00	— 0.77	— 27.04	18 10 8.75	+ 3 10.10	+ 18.5	18 56 17.19	— 3.65	69 19 58.5	+15.4
	43	B. VI + 20°, 4022	.	6	56 49.08	— 0.77	— 27.04	18 10 8.75	+ 2 55.91	+ 18.5	18 56 21.27	— 3.65	69 19 44.4	+15.4
	44	Lalande 36268[2]	5.8	3	11 34.16	— 0.76	— 27.04	24 30 10.75	+ 2 33.38	+ 25.6	19 11 6.36	— 3.76	75 39 30.9	+15.6
	45	δ Aquilæ	.	9	20 4.70	— 0.76	— **27.05**	35 56 7.72	+ 3 42.64	+ 40.8	19 19 36.90	. .	87 6 52.4	— 2.1
	46	κ Aquilæ	.	9	31 4.53	— 0.76	— **27.06**	46 6 11.08	+ 3 30.23	+ 58.5	19 30 36.73	. .	97 17 1.0	— 2.5
	47	Anonymous	11.0	9	36 54.61	— 0.76	— 27.04	44 4 8.10	+ 3 17.82	+ 54.5	19 36 26.81	— 4.09	95 14 41.6	+16.1
	48	Juno	8.5	7	37 12.57	— 0.76	— 27.04	44 4 8.10	+ 2 28.13	+ 54.4	19 36 44.77	. .	95 13 51.8	— 3.3
	49	λ Ursæ Minoris	.	4	43 10.08	—11.22	— 27.04	309 54 4.02	+ 3 33.41	— 1 7.0	19 42 31.82	. .	1 2 51.6	— 0.6
	50	β Aquilæ	.	9	50 2.73	— 0.76	— **27.01**	32 42 11.62	+ 3 46.18	+ 36.2	19 49 34.93	. .	83 52 55.2	— 1.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
1	30.16	83.9	87.3	ZENITH-POINT CORR.	1	— 2.9	— 15 47.0	.	— 15 49.9
4	30.13	87.4	88.8		6	— 3.8	+ 8.4	.	+ 4.6
7	30.14	88.4	89.4	″	7	— 3.8	— 8.4	+ 0.4	— 11.8
8	30.10	82.2	83.1	18, 19. One bisection. 1 to 7 + 51.14	8	— 47 22.1	+ 15 20.1	.	— 32 2.0
29	30.09	74.9	74.2	30. Three bisections. 8 to 50 + 49.70					
44	30.09	71.7	70.2	3, 9, 11, 49. Four bisections.					
				8. Five bisections.					

7. Barometer and thermometers read at $11^h\ 5^m$.

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 24, R.	1	τ Aquilæ . . .	.	9	58 54.29	— 0.76	— **27.03**	31 52 12.82	+ 3 46.16	+ 35.1	19 58 26.49	. .	83 2 55.3	— 2.2
	2	3 Ursæ Maj., S. P.	.	9	1 31.30	— 0.01	— 27.04	287 42 13.78	+ 3 14.83	— 2 53.8	8 1 4.25	. .	338 48 56.0	— 2.0
	3	κ Cephei (R) . .	.	.	. . . .	. .	. .	218 24 6.78	+ 3 3.07	+ 44.7	. . . .	. .	12 38 26.7	+ 0.2
	4	κ Cephei . . .	.	5	13 24.39	— 1.45	— 27.04	321 30 6.32	+ 2 42.08	— 44.7	20 12 55.90	. .	12 38 24.9	— 1.6
W.	5	δ Orionis . . .	.	9	26 28.62	— 0.64	— **27.63**	39 12 7.38	+ 3 56.43	+ 44.9	5 26 0.33	. .	90 23 9.9	— 4.2
	6	ε Orionis . . .	.	9	30 43.48	— 0.64	— **27.67**	40 6 8.05	+ 3 22.27	+ 46.3	5 30 15.19	. .	91 16 37.8	— 3.2
	7	α Orionis . . .	.	9	49 16.99	— 0.66	— **27.60**	31 26 5.58	+ 3 56.30	+ 33.6	5 48 48.67	. .	82 36 56.7	— 3.4
	8	μ Geminorum . .	.	9	16 19.54	— 0.72	— **27.62**	16 16 5.72	+ 2 59.11	+ 16.0	6 15 51.14	. .	67 25 42.0	— 2.4
	9	γ Geminorum . .	.	9	31 23.81	— 0.70	— **27.67**	22 20 8.58	+ 3 15.83	+ 22.5	6 30 55.42	. .	73 30 8.1	— 2.5
	10	α Canis Majoris .	.	9	40 26.23	— 0.61	— **27.71**	55 22 8.22	+ 3 32.94	+ 1 19.0	6 39 57.93	. .	106 33 21.4	— 1.9
	11	θ Geminorum . .	.	6	45 31.02	— 0.79	— 27.69	4 44 . .	. . .	. .	6 45 2.54	— 1.88	55 54 . .	. .
	12	ε Canis Majoris .	.	9	54 28.36	— 0.60	— **27.78**	67 36 9.32	+ 4 1.53	+ 2 11.6	6 54 0.06	. .	118 48 43.6	— 3.9
	13	Mercury II, N. .	.	9	59 32.44	— 0.72	— 27.70	17 4 4.35	+ 4 27.89	+ 16.8	6 59 4.02	— 0.24	68 15 10.2	. .
	14	Mercury S. . .	.	.	. . . .	. .	. .	17 4 4.35	+ 4 34.96	+ 16.8	. . . .	. .	68 15 17.3	. .
	15	δ Canis Majoris .	.	7	4 4.69	— 0.60	— **27.74**	65 0 3.68	+ 4 4.22	+ 1 56.4	7 3 36.39	. .	116 12 25.5	— 2.4
25	16	Sun I, N. . .	.	9	18 50.70	— 0.71	— 27.75	18 58 7.90	+ 3 54.25	+ 18.7	8 18 22.24	+67.09	70 8 42.1	. .
	17	Sun II, S. . .	.	9	21 4.88	— 0.71	— 27.75	19 30 10.85	+ 3 23.74	+ 19.3	8 20 36.42	—67.09	70 40 15.1	. .
	18	ε Leonis . . .	.	9	39 39.19	— 0.73	— **27.82**	14 30 1.78	+ 4 30.64	+ 14.1	9 39 10.67	. .	65 41 7.7	— 1.7
	19	α Leonis . . .	.	5	2 35.28	— 0.68	— **27.82**	26 18 . .	. . .	. .	10 2 6.80	. .	77 28 . .	. .
	20	γ¹ Leonis . . .	.	9	13 58.01	— 0.71	— **27.77**	18 23 58.75	+ 3 14.38	+ 18.1	10 13 29.49	. .	69 33 52.4	— 1.5
	21	Moon I, N. . .	.	9	4 38.16	— 0.54	— 28.15	59 43 59.35	+ 0 51.86	+ 1 34.5	16 4 9.47	+69.08	110 52 46.9	. .
	22	α Scorpii . . .	.	9	22 43.31	— 0.54	— **28.22**	64 58 2.92	+ 3 48.03	+ 1 58.2	16 22 14.61	. .	116 10 10.4	— 3.0
	23	β Herculis . . .	.	9	25 40.62	— 0.62	— **28.10**	17 4 7.12	+ 4 12.56	+ 17.1	16 25 11.84	. .	68 14 58.0	— 2.6
	24	ζ Ophiuchi . .	.	9	31 12.12	— 0.55	— **28.12**	49 8 6.70	+ 4 2.05	+ 1 4.1	16 30 43.41	. .	100 19 34.1	— 3.1
	25	η Herculis . . .	.	9	39 22.73	— 0.70	— **28.21**	359 40 8.80	+ 4 25.33	— 0.2	16 38 53.86	. .	50 50 55.1	— 2.3
	26	B. A. C. 5665 .	.	9	47 7.69	— 0.54	— 28.17	69 20 5.52	+ 4 30.67	+ 2 26.1	16 46 38.98	— 4.42	120 33 23.5	— 4.3
	27	Stone 9178 . .	.	8	47 28.31	— 0.54	— 28.17	69 20 5.52	+ 2 34.48	+ 2 25.9	16 46 59.60	— 4.42	120 31 27.1	— 4.2
	28	B. A. C. 5694 .	.	9	49 53.17	— 0.54	— 28.17	70 56 8.32	+ 3 43.56	+ 2 39.2	16 49 24.46	— 4.49	122 8 52.3	— 4.4
	29	Stone 9266 . .	.	9	56 15.12	— 0.54	— 28.18	70 14 0.35	+ 3 40.78	+ 2 33.2	16 55 46.40	— 4.50	121 26 35.5	— 3.5
	30	O. Arg. N. 16802¹	.	6	2 14.03	— 0.94	— 28.18	339 6 7.58	+ 3 9.31	— 21.1	17 1 44.91	— 2.45	30 15 17.0	+15.3
	31	O. Arg. N. 16802²	.	5	2 15.21	— 0.94	— 28.18	339 6 7.58	+ 3 1.89	— 21.1	17 1 46.09	— 2.45	30 15 9.6	+15.3
	32	Lalande 31378 .	.	9	8 20.26	— 0.83	— 28.18	346 18 8.12	+ 2 13.18	— 13.5	17 7 51.25	— 2.68	37 26 29.0	+14.9
	33	B. A. C. 5893 (R).	.	.	. . . .	. .	. .	145 18 7.60	+ 3 38.95	— 38.3	. . . .	. .	85 45 12.9	+ 7.7
	34	B. A. C. 5893 .	.	4	21 12.02	— 0.57	— 28.19	34 34 6.10	+ 4 5.25	+ 38.3	17 20 43.26	— 3.61	85 45 10.9	+ 7.7
	35	Lalande 32014 .	.	9	28 54.82	— 0.60	— 28.19	22 24 1.75	+ 4 52.74	+ 23.0	17 28 26.03	— 3.41	73 35 38.7	+10.7
	36	B. A. C. 5972 .	.	9	32 58.26	— 1.17	— 28.19	330 38 3.92	+ 3 11.01	— 31.1	17 32 28.90	— 2.52	21 47 5.0	+16.2
	37	B. A. C. 5991 .	.	9	37 13.11	— 0.60	— 28.19	22 48 6.65	+ 4 27.04	+ 23.4	17 36 44.32	— 3.45	73 59 18.3	+11.1
	38	O. Arg. N. 17464	.	9	39 55.32	— 1.38	— 28.20	326 20 9.58	+ 2 44.74	— 36.9	17 39 25.74	— 2.48	17 28 38.6	+16.3
	39	B. VI+20°, 3570	.	9	43 53.19	— 0.61	— 28.20	18 14 5.20	+ 2 39.25	+ 18.3	17 43 24.38	— 3.40	69 23 23.9	+12.2
	40	Weisse 912 . .	.	9	47 9.20	— 0.56	— 28.20	37 28 6.70	+ 4 30.85	+ 42.6	17 46 40.44	— 3.76	88 39 41.4	+ 9.0
	41	B. A. C. 6058 .	.	9	49 39.76	— 0.54	— 28.20	71 26 6.52	+ 4 50.60	+ 2 44.3	17 49 11.02	— 4.76	122 40 2.6	+ 2.3
	42	B. A. C. 6139 .	.	9	2 49.56	— 0.54	— 28.21	71 30 8.42	+ 4 35.89	+ 2 45.0	18 2 20.81	— 4.80	122 43 50.5	+ 3.8
	43	Weisse 46 . .	.	9	5 19.18	— 0.57	— 28.21	35 32 3.60	+ 2 33.69	+ 39.7	18 4 50.40	— 3.78	86 41 38.2	+10.7
	44	B. A. C. 6174 .	.	9	8 25.02	— 0.54	— 28.21	75 22 4.30	+ 4 29.12	+ 3 30.2	18 7 56.27	— 4.99	126 36 24.8	+ 3.8
	45	B. A. C. 6192 .	.	3	10 38.09	— 0.54	— 28.21	72 12 8.72	+ 4 41.53	+ 2 51.9	18 10 9.34	— 4.85	123 26 3.3	+ 4.6
	46	B. A. C. 6204 .	.	9	13 43.09	— 0.54	— 28.21	72 12 8.72	+ 0 57.32	+ 2 51.4	18 13 14.34	— 4.85	123 22 18.6	+ 5.0
	47	Lalande 33895 .	.	9	17 38.43	— 0.59	— 28.21	26 50 6.98	+ 4 27.02	+ 28.2	18 17 9.63	— 3.66	78 1 23.4	+12.8
	48	B. A. C. 6256 .	.	9	20 30.08	— 0.54	— 28.21	70 24 9.90	+ 2 42.83	+ 2 35.1	18 20 1.33	— 4.79	121 35 49.0	+ 6.1
	49	Gould Z. C. 1243	.	5	20 58.11	— 0.54	— 28.21	70 24 9.90	+ 4 56.26	+ 2 35.4	18 20 29.36	— 4.79	121 38 2.8	+ 6.2
	50	Weisse (2) 703 .	.	9	26 21.97	— 0.60	— 28.22	21 58 5.82	+ 4 0.90	+ 22.5	18 25 53.15	— 3.61	73 8 50.4	+13.9

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
4	30.10	70.8	68.6		ZENITH-POINT CORR.	13	— 2.6	+ 3.5	0.0	+ 0.9
6	30.18	77.1	83.1			14	— 2.6	— 3.6	.	— 6.2
15	30.20	83.8	88.4		″	16	— 2.8	+ 15 46.4	.	+ 15 43.6
17	30.18	85.8	90.0	3, 48. One bisection.	1 to 4 + 49.70	17	— 2.9	— 15 46.5	.	— 15 49.4
20	30.18	86.8	90.7	21. Five bisections.	5 to 20 + 49.14	21	— 49 7.5	+ 15 34.3	.	— 33 33.2
21	30.17	79.8	79.2		21 to 50 + 49.95					
36	30.17	78.6	77.7							

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 25, W.	1	Weisse 710		9	31 22.63	− 0.58	− 28.22	29 48 6.02	+ 2 54.17	+ 31.9	18 30 53.83	− 3.75	80 57 53.3	+13.3
	2	Lalande 34499		9	32 4.90	− 0.56	− 28.22	39 14 4.78	+ 3 0.08	+ 45.5	18 31 36.12	− 3.92	90 24 11.6	+12.1
	3	B. A. C. 6364		9	36 17.23	− 0.72	− 28.22	358 0 10.40	+ 3 32.86	− 1.9	18 35 48.29	− 3.37	49 10 2.6	+16.2
	4	Weisse (2) 1314		9	44 55.98	− 0.63	− 28.23	13 56 9.85	+ 2 9.02	+ 13.9	18 44 27.12	− 3.57	65 4 54.0	+15.5
	5	B. A. C. 6435		9	47 56.87	− 0.54	− 28.23	76 16 13.25	+ 5 29.97	+ 3 45.0	18 47 28.10	− 5.09	127 31 49.4	+ 8.4
	6	B. A. C. 6444		9	49 14.22	− 0.54	− 28.23	76 16 13.25	+ 3 3.93	+ 3 44.4	18 48 45.45	− 5.09	127 29 22.8	+ 8.6
	7	O. Arg. N. 18836		5	56 26.97	− 1.07	− 28.23	333 44 7.15	+ 3 43.33	− 27.4	18 55 57.67	− 3.46	24 53 44.3	+16.6
	8	O. Arg. N. 18838		5	57 48.15	− 0.80	− 28.23	348 28 8.80	+ 3 23.47	− 11.3	18 57 19.12	− 3.43	39 37 42.2	+16.7
	9	B. A. C. 6520		2	58 38.56	− 0.76	− 28.23	352 4 5.35	+ 3 18.92	− 7.7	18 58 9.57	− 3.44	43 13 37.8	+16.7
	10	*d* Sagittarii		9	11 17.14	− 0.54	**− 28.36**	57 58 5.08	+ 3 30.48	+ 1 29.1	19 10 48.36	. .	109 9 25.9	− 2.7
	11	B. A. C. 6603		9	12 47.19	− 0.80	− 28.24	348 58 8.45	+ 3 37.16	− 10.8	19 12 18.15	− 3.51	40 7 56.0	+16.8
	12	ρ^2 Sagittarii		9	15 31.06	− 0.54	− 28.24	57 20 13.62	+ 3 15.21	+ 1 27.0	19 15 2.28	− 4.39	108 31 17.0	+13.6
	13	B. A. C. 6640		9	18 39.03	− 0.90	− 28.24	341 26 6.02	+ 2 13.16	− 18.7	19 18 9.89	− 3.57	32 34 21.7	+16.6
	14	Lalande 36715		9	21 27.68	− 0.59	− 28.24	26 2 11.30	+ 3 28.20	+ 27.3	19 20 58.85	− 3.80	77 12 28.0	+16.2
	15	B. A. C. 6711		9	30 2.40	− 0.70	− 28.25	0 20 11.30	+ 2 47.37	+ 0.4	19 29 33.45	− 3.62	51 29 20.3	+16.9
	16	κ Aquilæ		9	31 5.53	− 0.55	**− 28.26**	46 6 11.28	+ 3 31.36	+ 58.1	19 30 36.73	. .	97 17 1.9	− 1.5
	17	λ Ursæ Minoris		5	43 17.20	−17.53	− 28.25	309 54 1.82	+ 3 34.14	− 1 6.6	19 42 31.42	. .	1 2 50.6	− 1.0
	18	α Aquilæ		9	45 34.33	− 0.58	**− 28.26**	30 16 . .	. . .	. . .	19 45 5.50	. .	81 26 . .	. .
	19	ε Draconis (R)		.	. . . .	. .	. .	211 0 7.92	+ 3 58.54	+ 33.7	. . . .	. .	20 1 41.0	− 0.9
	20	ε Draconis		.	. . . .	. .	. .	328 52 11.45	+ 3 41.37	− 33.7	19 48.6	. .	20 1 40.3	− 1.6
	21	τ Aquilæ		5	58 55.20	− 0.58	**− 28.12**	31 52 7.55	+ 3 50.08	+ 34.9	19 58 26.36	. .	83 2 53.7	− 3.7
27, R.	22	α Orionis		9	49 19.76	− 0.52	**− 30.44**	31 26 10.72	+ 3 52.53	+ 33.3	5 48 48.80	. .	82 36 57.7	− 2.1
	23	δ Ursæ Min., S. P.		2	10 46.85	+ 9.32	− 30.47	305 28 . .	. . .	. . .	18 10 25.70	. .	356 37 . .	. .
	24	μ Geminorum		8	16 22.29	− 0.63	**− 30.39**	16 16 10.92	+ 2 54.02	+ 15.9	6 15 51.18	. .	67 25 42.0	− 2.4
	25	γ Geminorum		9	31 26.54	− 0.58	**− 30.46**	22 20 14.68	+ 3 10.98	+ 22.3	6 30 55.47	. .	73 30 9.2	− 1.3
	26	α Canis Majoris		9	40 28.96	− 0.39	**− 30.61**	55 22 13.50	+ 3 28.41	+ 1 18.4	6 39 58.06	. .	106 33 21.5	− 1.3
	27	δ Canis Majoris		9	4 7.31	− 0.35	**− 30.56**	65 0 8.18	+ 3 59.80	+ 1 55.8	7 3 36.43	. .	116 12 25.0	− 2.2
	28	Sun I, N.		9	30 41.97	− 0.60	− 30.64	19 38 9.60	+ 4 27.96	+ 19.3	8 30 10.73	+66.87	70 49 18.1	. .
28	29	μ Herculis		9	42 25.47	− 0.57	**− 31.18**	11 2 12.05	+ 3 33.22	+ 10.9	17 41 53.60	. .	62 12 17.4	− 3.6
	30	γ Draconis (R)		.	. . . .	. .	. .	192 32 13.92	+ 4 23.51	+ 12.5	. . . .	. .	38 29 31.3	− 0.6
	31	γ Draconis		.	. . . .	. .	. .	347 20 10.88	+ 3 10.16	− 12.5	17 53.9	. .	38 29 29.7	− 2.2
	32	B. A. C. 6139		9	2 52.42	− 0.24	− 31.32	71 30 12.72	+ 4 31.80	+ 2 45.4	18 2 20.86	− 4.81	122 43 51.1	+ 3.7
	33	μ Sagittarii		9	7 18.48	− 0.29	**− 31.41**	59 54 8.72	+ 3 2.57	+ 1 36.0	18 6 46.87	. .	111 5 8.5	− 2.8
	34	η Serpentis		9	15 47.91	− 0.38	**− 31.36**	41 44 8.72	+ 4 9.17	+ 49.8	18 15 16.20	. .	92 55 28.9	− 1.8
	35	B. A. C. 6249	6.7	8	19 42.27	− 0.25	− 31.34	69 14 6.95	+ 4 23.01	+ 2 26.4	18 19 10.68	− 4.75	120 27 17.6	+ 6.1
	36	Weisse (2) 703		9	26 24.96	− 0.49	− 31.34	21 58 8.80	+ 3 58.12	+ 22.6	18 25 53.13	− 3.61	73 8 50.7	+14.5
	37	O. Arg. S. 18605	7.5	9	38 1.23	− 0.28	− 31.35	64 16 12.85	+ 4 28.29	+ 1 55.5	18 37 29.60	− 4.60	115 28 57.8	+ 9.0
	38	51 Cephei, S. P.		7	45 6.86	+ 9.81	− 31.36	306 3 53.88	+ 4 20.45	− 1 16.2	6 44 45.31	. .	357 13 19.3	− 2.1
	39	D. M. + 20°, 4021		4	56 48.98	− 0.51	− 31.37	18 10 13.48	+ 3 3.82	+ 18.4	18 56 17.10	− 3.66	69 19 56.9	+16.3
	40	B. VI + 20°, 4022		5	56 53.06	− 0.51	− 31.37	18 10 13.48	+ 2 50.10	+ 18.4	18 56 21.18	− 3.66	69 19 43.2	+16.3
	41	B. A. C. 6541		5	2 31.63	− 0.21	− 31.38	78 16 8.95	+ 4 32.50	+ 4 23.1	19 2 0.04	− 5.22	129 31 25.7	+ 9.6
	42	Moon I, N.		9	7 53.99	− 0.30	− 31.38	58 4 11.28	+ 3 15.96	+ 1 29.5	19 7 22.31	+71.89	109 15 17.9	. .
	43	Moon S.		.	. . . .	. .	. .	58 36 13.32	+ 4 4.92	+ 1 31.4	19 8.6	. .	109 48 10.8	. .
	44	B. A. C. 6640		9	18 42.18	− 1.01	− 31.39	341 26 10.72	+ 2 7.56	− 18.7	19 18 9.78	− 3.55	32 34 20.8	+17.6
	45	Juno		9	33 50.32	− 0.36	− 31.41	44 24 9.72	+ 3 48.22	+ 54.8	19 33 18.53	. .	95 35 13.9	− 3.3
	46	Groom. 3161, S. P.		9	41 22.76	+ 2.09	− 31.42	296 44 9.85	+ 3 46.56	− 1 50.1	7 40 53.43	− 0.77	347 52 27.5	+14.2
	47	λ Ursæ Minoris		6	43 27.40	−26.73	− 31.42	309 54 7.00	+ 3 27.41	− 1 6.6	19 42 29.25	. .	1 2 49.0	− 1.6
	48	ε Delphini		9	28 10.37	− 0.45	**− 31.44**	27 56 10.12	+ 2 25.75	+ 29.7	20 27 38.46	. .	79 5 26.8	− 2.7
	49	Pallas		9	41 27.86	− 0.48	− 31.47	23 20 15.85	+ 2 48.75	+ 24.2	20 40 55.91	. .	74 29 50.0	− 1.4
	50	μ Aquarii		9	46 53.33	− 0.34	**− 31.49**	48 14 10.12	+ 3 33.72	+ 1 2.7	20 46 21.51	. .	99 25 7.7	− 2.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
21	30.20	74.9	73.7		ZENITH-POINT CORR.	28	− 2.9	+ 15 46.8	.	+ 15 43.9
22	30.06	83.4	86.2			42	− 50 35.8	+ 16 17.6	.	− 34 18.2
26	30.07	85.9	88.4		″	43	− 50 53.8	− 16 17.6	+ 0.3	− 67 11.1
28	30.05	88.5	91.0	5. One bisection.	1 to 21 + 49.95					
29	30.02	75.9	73.1	42, 47. Three bisections.	22 to 28 + 48.61					
39	30.01	74.4	71.7	22, 26, 46. Four bisections.	29 to 50 + 50.04					
				38. Five bisections.						

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
July 28, R.	1	Metis		9	51 31.84	− 0.27	− 31.48	64 46 13.00	+ 3 21.37	+ 1 58.3	20 51 0.09	. .	115 57 53.9	− 5.3
	2	12 Y. Cat., 1879.		5	53 35.03	− 2.99	− 31.48	318 44 9.28	+ 3 30.74	− 48.9	20 53 0.56	. .	9 53 12.3	− 1.9
	3	σ^2 Ursæ Maj., S. P.		7	0 30.73	+ 1.03	− 31.49	286 30 17.75	+ 2 58.82	− 3 5.6	9 0 0.27	. .	337 36 32.2	− 0.8
	4	ζ Cygni		9	8 30.70	− 0.58	**− 31.38**	9 6 15.82	+ 2 17.18	+ 9.0	21 7 58.62	. .	60 15 3.2	− 2.1
	5	Ægina		5	15 29.21	− 0.30	− 31.51	57 48 14.50	+ 3 30.29	+ 1 28.8	21 14 57.40	. .	108 59 34.8	− 4.3
	6	Tolosa		5	17 32.22	− 0.29	− 31.51	61 4 13.68	+ 3 7.83	+ 1 41.0	21 17 0.42	. .	112 15 23.7	− 7.4
	7	Thyra		5	20 55.56	− 0.32	− 31.51	52 58 19.92	+ 2 58.95	+ 1 14.2	21 20 23.73	. .	104 8 54.3	− 5.5
	8	Elpis		9	26 38.70	− 0.36	− 31.52	45 24 1.32	+ 4 8.16	+ 56.8	21 26 6.82	. .	96 35 27.5	− 4.0
	9	ξ Aquarii		3	32 4.23	− 0.35	**− 31.62**	47 12 . .	. . .	. .	21 31 32.36	. .	98 23 . .	. .
	10	16 Pegasi (R)		.	. . .	. .	. .	166 26 12.28	+ 2 54.29	− 13.5	. . . .	. .	64 37 28.1	+18.8
	11	16 Pegasi		.	. . .	. .	. .	13 28 11.10	+ 2 39.76	+ 13.5	21 47.8	. .	64 37 25.6	+18.8
	12	α Aquarii		9	0 19.26	− 0.38	**− 31.58**	39 42 12.10	+ 3 49.07	+ 46.6	21 59 47.33	. .	90 53 9.0	− 1.4
August 4, E.	13	δ Scorpii		9	54 5.00	− 0.54	**− 39.28**	61 6 12.80	+ 2 55.61	+ 1 40.0	15 53 25.14	. .	112 17 9.6	− 2.2
	14	β Scorpii		9	59 18.16	− 0.54	**− 39.32**	58 18 10.85	+ 2 54.94	+ 1 29.4	15 58 38.30	. .	109 28 56.4	− 2.0
	15	δ Ophiuchi		9	8 52.98	− 0.55	**− 39.34**	42 12 13.90	+ 3 54.68	+ 50.2	16 8 13.10	. .	93 23 20.0	− 1.5
	16	τ Herculis		9	16 53.99	− 0.74	**− 39.32**	352 14 9.82	+ 3 39.12	− 7.5	16 16 13.91	. .	43 24 2.6	− 2.3
	17	η Draconis		9	23 5.61	− 0.94	− 39.35	337 4 . .	. . .	. .	16 22 25.32	. .	28 13 . .	. .
	18	β Herculis		9	25 51.67	− 0.60	**− 39.31**	17 4 . .	. . .	. .	16 25 11.71	. .	68 15 . .	. .
	19	A Draconis		9	28 54.86	− 1.15	− 39.36	329 50 6.90	+ 2 20.51	− 32.1	16 28 14.35	. .	20 58 16.5	− 3.2
	20	η Herculis		9	39 33.77	− 0.68	**− 39.46**	359 40 11.78	+ 4 20.83	− 0.2	16 38 53.72	. .	50 50 53.6	− 2.3
	21	Lalande 30694		9	47 45.40	− 0.55	− 39.38	38 36 8.82	+ 3 27.44	+ 44.3	16 47 5.47	− 3.46	89 46 41.8	+ 4.8
	22	B. A. C. 5694		9	50 4.32	− 0.54	− 39.39	70 56 10.95	+ 3 41.01	+ 2 39.3	16 49 24.39	− 4.39	122 8 52.5	− 4.8
	23	α Herculis		9	9 59.29	− 0.58	**− 39.39**	24 18 13.28	+ 3 13.97	+ 25.1	17 9 19.30	. .	75 28 13.5	− 3.1
	24	δ Ophiuchi		9	19 54.14	− 0.54	**− 39.47**	62 52 7.25	+ 3 34.56	+ 1 48.1	17 19 14.17	. .	114 3 51.1	− 3.2
	25	Lalande 32014		9	29 6.06	− 0.58	− 39.44	22 24 4.62	+ 4 47.75	+ 23.0	17 28 26.04	− 3.32	73 35 36.6	+12.0
	26	α Ophiuchi		9	30 10.88	− 0.58	**− 39.45**	26 10 11.18	+ 3 56.50	+ 27.4	17 29 30.86	. .	77 20 56.3	− 3.6
	27	B. A. C. 5983		9	36 40.86	− 0.54	− 39.45	68 54 . .	. . .	. .	17 36 0.87	− 4.54	120 7 . .	. .
	28	Lalande 32455		9	39 22.64	− 0.79	− 39.45	346 58 10.22	+ 2 49.26	− 12.8	17 38 42.40	− 2.70	38 7 7.9	+17.8
	29	μ Herculis		9	42 33.67	− 0.62	**− 39.41**	11 2 14.00	+ 3 30.44	+ 10.9	17 41 53.60	. .	62 12 16.5	− 3.2
	30	γ Draconis		9	54 35.41	− 0.78	− 39.47	347 20 6.75	+ 3 11.46	− 12.4	17 53 55.16	. .	38 29 27.0	− 3.3
6, E.	31	α Orionis		9	49 32.86	− 0.72	**− 43.10**	31 26 . .	. . .	. .	5 48 49.00	. .	82 37 . .	...
	32	μ Geminorum		9	16 35.39	− 0.72	**− 43.16**	16 16 13.52	+ 2 51.09	+ 16.0	6 15 51.53	. .	67 25 41.8	− 2.6
	33	γ Geminorum		9	31 39.62	− 0.72	**− 43.17**	22 20 14.95	+ 3 8.51	+ 22.5	6 30 55.76	. .	73 30 7.2	− 3.0
	34	α Canis Majoris		9	40 42.04	− 0.75	**− 43.14**	55 22 4.82	+ 3 33.27	+ 1 19.0	6 39 58.15	. .	106 33 18.3	− 2.7
7	35	Sun I, N.		5	9 37.56	− 0.72	− 43.14	22 14 10.35	+ 3 8.76	+ 22.2	9 8 53.70	+66.07	73 24 2.5	. .
	36	Sun II, S.		5	11 49.70	− 0.72	− 43.14	22 50 11.80	− 1 20.59	+ 22.8	9 11 5.84	−66.07	73 55 35.2	. .
8, W.	37	γ Cygni		9	18 50.56	− 0.67	**− 46.37**	358 58 . .	. . .	. .	20 18 3.49	. .	50 7 . .	. .
	38	π Capricorni		9	21 25.12	− 0.25	**− 46.44**	57 24 14.80	+ 3 26.49	+ 1 26.3	20 20 38.47	. .	108 35 28.8	− 2.9
	39	Groom. 3241		9	31 23.54	− 1.76	− 46.42	326 42 15.78	+ 3 43.62	− 36.2	20 30 35.36	. .	17 51 44.4	− 1.9
	40	α Cygni		9	38 15.66	− 0.74	**− 46.41**	353 58 15.50	+ 3 33.58	− 5.8	20 37 28.49	. .	45 8 4.5	− 1.8
	41	B. A. C. 7230		7	41 44.32	− 4.46	− 46.43	315 38 15.72	+ 3 4.92	− 53.9	20 40 53.43	− 7.89	6 46 47.9	+17.8
	42	D.M.+80°, 281, S. P.		5	50 56.47	+ 3.01	− 46.45	299 38 9.85	+ 3 51.67	− 1 36.4	8 50 13.03	+ 1.24	350 46 46.3	+15.8
	43	61[1] Cygni		9	2 27.80	− 0.65	**− 46.46**	0 40 . .	. . .	. .	21 1 40.68	. .	51 50 . .	. .
	44	Elpis		9	18 33.76	− 0.31	− 46.49	46 32 10.92	+ 3 49.92	+ 58.3	21 17 46.96	. .	97 43 20.3	− 3.3
	45	β Aquarii		9	26 11.78	− 0.31	**− 46.50**	44 54 7.82	+ 3 31.71	+ 55.1	21 25 24.97	. .	96 4 55.8	− 3.2
10, W.	46	γ Corvi		9	10 35.12	− 0.51	**− 48.28**	55 42 4.80	+ 3 39.53	+ 1 20.3	12 9 46.33	. .	106 53 25.8	− 2.8
	47	η Virginis		9	14 42.92	− 0.54	**− 48.28**	38 50 7.45	+ 3 35.75	+ 44.2	12 13 54.10	. .	90 0 48.6	− 3.0
	48	α^2 Can. Venat.		9	51 20.80	− 0.66	**− 48.29**	359 52 2.35	+ 4 14.88	− 0.1	12 50 31.83	. .	51 2 38.3	− 2.4
	49	Polaris, S. P.		6	17 5.72	+13.37	− 48.34	307 32 1.78	+ 3 29.43	− 1 11.0	1 16 30.75	. .	358 40 41.4	− 4.0
	50	α Virginis		9	19 49.88	− 0.51	**− 48.35**	49 22 3.88	+ 3 22.19	+ 1 3.8	13 19 1.03	. .	100 32 51.1	− 3.9

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
12	30.02	72.7	70.3
13	30.06	78.0	77.5
30	30.08	75.0	75.0
31	30.00	82.2	82.2
36	29.98	85.0	87.0
38	29.68	74.9	71.8
45	29.67	73.0	71.2
47	30.02	80.3	81.4
50	30.01	80.4	81.8

For summary of the constants of reduction see page 3.

6. One bisection.
49. Five bisections.

ZENITH-POINT CORR.

″

1 to 12 + 50.04
13 to 30 + 50.62
32 to 36 + 49.27
38 to 45 + 50.94
46 to 50 + 50.88

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
35	− 3.3	+ 15 46.3	.	+ 15 43.0
36	− 3.4	− 15 46.3	.	− 15 49.7

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
August 10, W.	1	ζ Virginis . . .	.	9	29 32.02	— 0.53	— **48.35**	38 48 2.42	+ 4 29.83	+ 44.1	13 28 43.14	. .	89 59 37.5	— 3.3
	2	Lalande 30694 .	.	9	47 54.44	— 0.49	— 48.56	38 36 2.02	+ 3 34.52	+ 44.4	16 47 5.39	— 3.40	89 46 42.1	+ 5.3
	3	Weisse (2) 1513 .	.	9	50 42.18	— 0.53	— 48.56	17 38 3.98	+ 6 17.15	+ 17.8	16 49 53.09	— 2.97	68 50 50.1	+11.4
	4	κ Ophiuchi . .	.	9	52 57.28	— 0.50	— **48.57**	29 16 . .	. . .	. .	16 52 8.22	. .	80 26 . .	. .
	5	d Herculis . . .	.	9	58 6.86	— 0.58	— **48.56**	5 6 6.02	+ 2 47.59	+ 5.0	16 57 17.72	. .	56 15 19.8	— 2.0
	6	α Ophiuchi . .	.	9	30 19.87	— 0.51	— **48.57**	26 10 2.92	+ 4 4.67	+ 27.5	17 29 30.78	. .	77 20 56.3	— 2.8
	7	B. A. C. 5991 .	.	9	37 33.26	— 0.52	— 48.59	22 48 6.18	+ 4 25.37	+ 23.5	17 36 44.15	— 3.31	73 59 16.3	+13.4
	8	O. Arg. N. 17464	.	9	40 14.74	— 1.21	— 48.59	326 20 10.22	+ 2 40.78	— 37.1	17 39 24.94	— 1.57	17 28 35.1	+19.8
	9	Weisse (2) 1438 .	.	9	46 40.64	— 0.56	— 48.59	9 28 8.28	+ 3 46.20	+ 9.4	17 45 51.59	— 3.10	60 38 25.1	+16.6
	10	γ Draconis . . .	.	9	54 44.00	— 0.71	— **48.62**	347 20 9.55	+ 3 9.82	— 12.5	17 53 54.69	. .	38 29 28.1	— 0.9
	11	γ^2 Sagittarii . . .	.	9	59 7.32	— 0.47	— **48.58**	69 12 3.80	+ 4 29.68	+ 2 26.5	17 58 18.25	. .	120 25 21.2	— 2.1
	12	Weisse 46 . . .	.	9	5 39.40	— 0.49	— 48.60	35 32 9.02	+ 2 27.58	+ 40.0	18 4 50.31	— 3.69	86 41 37.8	+12.4
	13	δ Ursæ Minoris .	.	5	11 15.68	— 5.02	— 48.60	312 14 2.30	+ 3 42.17	— 1 1.4	18 10 22.06	. .	3 23 4.3	— 0.9
	14	B. A. C. 6231 .	.	7	16 10.88	— 0.54	— 48.61	16 54 5.88	+ 4 13.47	+ 17.1	18 15 21.73	— 3.39	68 4 57.7	+16.9
	15	1 Aquilæ . . .	.	9	29 40.27	— 0.48	— **48.61**	47 8 5.25	+ 3 50.79	+ 1 0.4	18 28 51.17	. .	98 19 17.6	— 2.5
	16	Lalande 34499 .	.	9	32 25.20	— 0.49	— 48.62	39 14 3.25	+ 3 1.15	+ 45.8	18 31 36.09	— 3.87	90 24 11.4	+13.7
	17	B. A. C. 6438 (R)	.	.	. . . .	. .	. .	162 20 5.65	+ 3 51.74	— 17.8	. . . .	. .	68 42 41.6	+18.5
	18	B. A. C. 6438 .	.	.	. . . .	. .	. .	17 32 7.08	+ 3 51.96	+ 17.8	18 47.3	. .	68 42 38.0	+18.5
E.	19	μ Geminorum . .	.	9	16 40.78	— 0.58	— **48.59**	16 15 57.20	+ 3 5.03	+ 16.5	6 15 51.59	. .	67 25 39.9	— 4.5
	20	γ Geminorum . .	.	9	31 45.04	— 0.57	— **48.65**	22 20 10.42	+ 3 12.09	+ 23.2	6 30 55.85	. .	73 30 6.9	— 3.2
	21	α Canis Majoris .	.	9	40 47.58	— 0.57	— 48.63	55 22 9.55	+ 3 28.75	+ 1 21.6	6 39 58.38	. .	106 33 21.1	+ 0.7
	22	α^2 Geminorum . .	.	9	27 55.51	— 0.60	— **48.63**	6 42 9.22	+ 2 44.72	+ 6.6	7 27 6.24	. .	57 51 21.7	— 3.6
	23	α Canis Minoris .	.	9	33 58.38	— 0.56	— **48.68**	33 18 8.42	+ 3 22.37	+ 37.0	7 33 9.14	. .	84 28 29.0	— 2.8
	24	β Geminorum . .	.	9	38 56.92	— 0.59	— **48.71**	10 32 9.08	+ 2 51.64	+ 10.5	7 38 7.65	. .	61 41 32.4	— 2.4
11	25	Sun I, S. . .	.	9	24 55.69	— 0.57	— 48.78	23 53 57.60	+ 4 31.30	+ 24.8	9 24 6.34	+65.76	75 5 14.9	. .
	26	Sun II, N. . .	.	9	27 7.21	— 0.57	— 48.78	23 22 3.50	+ 4 48.31	+ 24.1	9 26 17.86	—65.76	74 33 37.1	. .
	27	β Leonis . . .	.	9	43 53.51	— 0.57	— **48.82**	23 36 0.30	+ 3 27.70	+ 24.2	11 43 4.04	. .	74 36 13.4	— 2.5
	28	γ Corvi	.	4	10 35.85	— 0.57	— **48.95**	55 42 1.80	+ 3 41.22	+ 1 21.0	12 9 46.36	. .	106 53 25.2	— 3.3
	29	η Virginis . . .	.	9	14 43.62	— 0.56	— **48.97**	38 50 8.32	+ 3 34.28	+ 44.6	12 13 54.13	. .	90 0 48.4	— 3.1
	30	b Ophiuchi . . .	.	7	20 3.66	— 0.56	— **49.05**	62 52 3.80	+ 3 38.00	+ 1 49.4	17 19 14.15	. .	114 3 52.4	— 1.9
	31	Lalande 32014 .	.	9	29 15.41	— 0.56	— 48.96	22 26 3.40	+ 2 48.47	+ 23.3	17 28 25.89	— 3.25	73 35 36.4	+13.0
	32	α Ophiuchi . . .	.	9	30 20.28	— 0.56	— **48.95**	26 10 3.40	+ 4 3.95	+ 27.7	17 29 30.76	. .	77 20 56.3	— 2.8
	33	Lalande 32455 .	.	9	39 31.73	— 0.67	— 48.96	346 58 5.20	+ 2 53.40	— 13.0	17 38 42.10	— 2.53	38 7 6.8	+19.3
	34	μ Herculis . . .	.	9	42 42.99	— 0.58	— **48.87**	11 2 4.52	+ 3 38.94	+ 11.0	17 41 53.45	. .	62 12 15.7	— 2.9
	35	O. Arg. S. 17316	.	9	47 6.48	— 0.57	— 48.96	67 44 2.52	+ 6 15.42	+ 2 17.0	17 46 16.95	— 4.49	118 58 56.1	+ 2.2
	36	M. Z. 27, 51 . .	.	9	52 22.27	— 0.57	— 48.96	67 44 2.52	+ 0 30.37	+ 2 16.5	17 51 32.74	— 4.51	118 53 10.6	+ 2.8
	37	B. A. C. 6144 .	.	9	3 15.48	— 0.58	— 48.96	70 56 6.85	+ 4 26.94	+ 2 41.8	18 2 25.94	— 4.68	122 9 36.8	+ 3.1
	38	Lalande 33412 .	.	9	5 45.57	— 0.56	— 48.97	22 22 6.22	+ 3 32.74	+ 23.2	18 4 56.04	— 3.43	73 32 23.4	+15.4
	39	B. A. C. 6181 .	.	9	9 27.13	— 0.58	— 48.97	69 58 8.42	+ 4 30.55	+ 2 33.6	18 8 37.58	— 4.67	121 11 33.8	+ 4.0
	40	δ Ursæ Minoris .	.	4	11 13.90	— 3.61	— 48.97	312 14 . .	. . .	. .	18 10 21.32	. .	3 23 . .	. .
	41	XVIII, 10 . .	.	9	16 55.81	— 0.57	— 48.97	66 22 7.08	+ 2 47.84	+ 2 8.1	18 16 6.27	— 4.55	117 33 24.2	+ 5.8
	42	O. Arg. S. 18261	8.6	6	22 30.15	— 0.57	— 48.97	65 26 5.05	+ 5 19.23	+ 2 2.9	18 21 40.61	— 4.54	116 39 48.4	+ 6.6
	43	O. Arg. S. 18262	7.5	5	22 30.29	— 0.57	— 48.97	65 26 5.05	+ 4 37.10	+ 2 2.8	18 21 40.75	— 4.54	116 39 6.2	+ 6.6
	44	B. A. C. 6334 .	.	9	31 31.31	— 0.58	— 48.97	71 34 4.88	+ 3 27.30	+ 2 47.7	18 30 41.76	— 4.80	122 46 41.1	+ 6.1
	45	M. Z. 45, 21 . .	.	9	34 4.57	— 0.57	— 48.97	66 24 2.85	+ 6 6.55	+ 2 8.7	18 33 15.03	— 4.61	117 38 39.3	+ 7.6
	46	O. Arg. S. 18537	.	9	35 18.10	— 0.57	— 48.97	66 24 2.85	+ 0 30.55	+ 2 8.1	18 34 28.56	— 4.61	117 33 2.7	+ 7.8
	47	51 Cephei, S. P. . .	.	6	45 35.77	+ 3.60	— 48.97	306 4 3.55	+ 4 9.20	— 1 17.0	6 44 50.40	. .	357 13 17.0	— 0.7
	48	B. A. C. 6455 .	.	9	51 26.46	— 0.58	— 48.98	69 46 4.25	+ 3 35.73	+ 2 32.1	18 50 36.90	— 4.78	120 58 33.3	+ 8.8
	49	ζ Aquilæ . . .	.	9	0 52.43	— 0.56	— **48.95**	25 8 3.70	+ 3 27.14	+ 26.5	19 0 2.89	. .	76 18 18.5	— 2.9
	50	d Sagittarii . .	.	9	11 37.80	— 0.56	— **49.01**	57 58 0.60	+ 3 33.07	+ 1 30.1	19 10 48.26	. .	109 9 25.0	— 3.5

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
2	30.04	75.1	74.3
18	30.09	72.1	70.8
19	30.21	68.5	69.0
26	30.20	75.0	76.4
29	30.19	78.2	80.0
30	30.16	72.0	71.0

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

″

1 + 50.88

2 to 18 + 51.81

19 to 29 + 50.72

30 to 50 + 51.69

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
25	— 3.5	— 15 48.9	. .	— 15 52.4
26	— 3.5	+ 15 48.9	. .	+ 15 45.4

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
August 11, E.	1	δ Aquilæ . . .	.	9	20 26.40	− 0.55	**− 48.98**	35 56 5.45	+ 3 44.37	+ 41.0	19 19 36.87	. .	87 6 52.0	− 0.2
	2	D. M.+57°, 2013 (R)	.	.	. . . .	. .	. .	198 46 4.55	+ 3 31.27	+ 19.2	. . . .	. .	32 16 26.2	+22.0
	3	D. M.+57°, 2013	.	.	. . . .	. .	. .	341 6 4.32	+ 4 17.80	− 19.2	19 27.5	. .	32 16 24.1	+22.0
14, W.	4	a^1 Herculis . . .	.	9	10 11.22	− 0.61	**− 51.43**	24 18 . .	. . .	. .	17 9 19.20	. .	75 28 . .	. .
	5	η Serpentis . .	.	9	16 8.13	− 0.61	**− 51.47**	41 44 6.08	+ 4 10.70	+ 49.4	18 15 16.06	. .	92 55 27.4	− 2.1
	6	B. A. C. 6252 .	.	9	19 4.89	− 0.69	− 51.46	349 10 9.38	+ 3 10.89	− 10.5	18 18 12.74	− 2.84	40 19 31.0	+21.2
	7	D. M.+72°, 325, S. P.	.	8	25 57.20	+ 0.27	− 51.47	291 28 2.70	+ 3 1.56	− 2 19.0	6 25 6.00	− 3.57	342 35 6.5	+18.0
	8	1 Aquilæ . . .	.	9	29 43.20	− 0.62	**− 51.43**	47 8 7.42	+ 3 49.54	+ 59.6	18 28 51.11	. .	98 19 17.8	− 2.0
	9	α Lyræ . . .	.	9	33 51.90	− 0.64	**− 51.48**	0 10 8.58	+ 2 38.50	+ 0.2	18 32 59.78	. .	51 19 8.5	− 2.5
	10	51 Cephei, S. P. .	.	7	45 39.69	+ 3.27	− 51.49	306 4 9.60	+ 4 1.31	− 1 15.6	6 44 51.47	. .	357 13 16.5	− 0.6
	11	ε Pegasi . . .	.	9	39 19.79	− 0.61	**− 51.64**	29 30 8.75	+ 2 26.28	+ 31.6	21 38 27.55	. .	80 39 27.8	− 3.5
	12	μ Capricorni . .	.	9	47 48.22	− 0.62	**− 51.59**	52 56 . .	. . .	. .	21 46 55.96	. .	104 6 . .	. .
	13	Melete . . .	.	9	52 17.17	− 0.61	− 51.64	39 18 7.65	+ 3 6.62	+ 45.7	21 51 24.92	. .	90 28 21.2	− 5.3
	14	α Aquarii . . .	.	9	0 39.81	− 0.61	**− 51.69**	39 42 8.92	+ 3 47.83	+ 46.4	21 59 47.55	. .	90 53 4.4	− 3.8
	15	γ Aquarii . . .	.	9	16 30.06	− 0.61	− 51.66	40 48 7.40	+ 3 8.20	+ 48.2	22 15 37.79	− 4.13	91 58 25.0	+25.6
	16	Victoria . . .	.	5	20 58.16	− 0.61	− 51.67	30 16 6.82	+ 4 47.92	+ 32.6	22 20 5.88	. .	81 27 48.5	− 5.0
	17	B. A. C. 7923 (R)	.	.	. . . .	. .	. .	170 40 14.55	+ 2 53.17	− 9.1	. . . .	. .	60 23 22.6	+21.6
	18	B. A. C. 7923 .	.	.	. . . .	. .	. .	9 14 8.75	+ 2 41.32	+ 9.1	22 37.5	. .	60 23 20.4	+21.6
	19	74 Aquarii . . .	.	9	48 12.22	− 0.62	− 51.69	51 2 11.72	+ 4 25.74	+ 1 9.1	22 47 19.91	− 4.11	102 14 7.8	+27.2
	20	Weisse 1047 .	.	9	52 51.93	− 0.62	− 51.69	50 34 6.62	+ 3 39.03	+ 1 7.9	22 51 59.62	− 4.10	101 45 14.7	+27.3
	21	Weisse 1079 .	.	9	54 19.08	− 0.62	− 51.70	52 30 11.78	+ 3 55.19	+ 1 12.8	22 53 26.76	− 4.10	103 41 41.0	+27.4
	22	Weisse 1204 .	.	9	59 14.99	− 0.62	− 51.70	51 38 10.35	+ 2 39.93	+ 1 10.5	22 58 22.67	− 4.07	102 48 22.0	+27.4
	23	Weisse 1261 .	.	9	2 9.87	− 0.62	− 51.70	51 14 12.35	+ 4 25.82	+ 1 9.6	23 1 17.55	− 4.06	102 26 9.0	+27.4
	24	Weisse 57^1 . .	.	6	6 45.37	− 0.62	− 51.71	51 22 12.05	+ 4 10.13	+ 1 9.9	23 5 53.04	− 4.04	102 33 53.3	+27.5
	25	Weisse 57^2 . .	.	5	6 45.68	− 0.62	− 51.71	51 22 12.05	+ 4 11.17	+ 1 9.9	23 5 53.35	− 4.04	102 33 54.3	+27.5
	26	Weisse 185 . .	.	9	12 26.69	− 0.62	− 51.71	51 10 10.85	+ 3 14.77	+ 1 9.4	23 11 34.36	− 4.02	102 20 56.2	+27.6
	27	Weisse 309 . .	.	9	17 49.44	− 0.62	− 51.72	50 14 7.25	+ 3 5.29	+ 1 7.2	23 16 57.10	− 4.00	101 24 40.9	+27.5
	28	Weisse 377 . .	.	9	21 25.07	− 0.62	− 51.72	49 30 7.55	+ 2 54.00	+ 1 5.4	23 20 32.73	− 3.98	100 40 28.2	+27.4
	29	Weisse 488 . .	.	9	26 45.53	− 0.62	− 51.72	50 28 8.18	+ 2 35.01	+ 1 7.7	23 25 53.19	− 3.96	101 38 12.1	+27.6
	30	Weisse 586 . .	.	9	30 51.04	− 0.62	− 51.73	48 14 8.38	+ 3 1.42	+ 1 2.6	23 29 58.69	− 3.94	99 24 33.6	+27.2
15, E.	31	ε Canis Majoris .	.	9	54 53.94	− 0.43	**− 53.10**	67 36 9.88	+ 3 54.71	+ 2 12.6	6 54 0.49	. .	118 48 38.4	− 4.4
	32	δ Canis Majoris .	.	9	4 30.24	− 0.44	**− 53.04**	65 0 11.02	+ 3 51.00	+ 1 57.4	7 3 36.77	. .	116 12 20.6	− 2.7
	33	δ Geminorum . .	.	9	14 0.22	− 0.59	**− 52.98**	16 38 12.50	+ 3 22.68	+ 16.4	7 13 6.59	. .	67 48 12.8	− 2.2
	34	a^2 Geminorum .	.	9	28 0.06	− 0.66	**− 53.00**	6 42 10.18	+ 2 45.61	+ 6.5	7 27 6.34	. .	57 51 23.5	− 2.3
	35	α Canis Minoris .	.	9	34 2.86	− 0.52	**− 53.11**	33 18 7.55	+ 3 24.18	+ 36.0	7 33 9.28	. .	84 28 28.9	− 2.6
	36	β Geminorum . .	.	9	39 1.40	− 0.63	**− 53.05**	10 32 9.48	+ 2 51.47	+ 10.2	7 38 7.70	. .	61 41 32.4	− 2.7
16	37	β Leonis . . .	.	9	43 57.98	− 0.56	− 53.33	23 36 6.10	+ 3 23.85	+ 23.7	11 43 4.09	. .	84 46 14.9	− 1.1
	38	B. A. C. 6186 .	.	9	10 37.58	− 0.40	− 53.73	75 32 9.25	+ 5 37.51	+ 3 31.2	18 9 43.45	− 4.84	126 47 39.2	+ 2.2
	39	B. A. C. 6221 .	.	9	15 52.42	− 0.40	− 53.74	75 32 9.25	+ 1 18.09	+ 3 30.2	18 14 58.28	− 4.86	126 43 18.7	+ 2.9
	40	B. A. C. 6249 .	.	9	20 4.80	− 0.41	− 53.74	69 14 8.12	+ 4 22.85	+ 2 24.8	18 19 10.65	− 4.61	120 27 17.0	+ 5.1
	41	Anonymous . .	11.0	9	27 27.39	− 0.40	− 53.75	76 46 12.72	+ 1 50.46	+ 3 50.0	18 26 33.24	− 4.96	127 58 14.4	+ 3.9
	42	Tr. Z. 47, 24 .	8	5	28 17.87	− 0.40	− 53.75	76 46 12.72	+ 3 17.86	+ 3 50.5	18 27 23.72	− 4.97	127 59 42.3	+ 4.0
	43	Weisse (2) 934 .	.	9	33 15.23	− 0.63	− 53.76	5 28 11.12	+ 2 45.03	+ 5.3	18 32 20.84	− 3.20	56 37 22.7	+20.4
	44	51 Cephei, S. P. .	.	4	45 39.28	+ 7.71	− 53.77	306 4 10.00	+ 3 58.88	− 1 15.4	6 44 53.22	. .	357 13 14.7	− 2.0
	45	σ Sagittarii . .	.	4	48 55.71	− 0.42	**− 53.85**	65 14 . .	. . .	. .	18 48 1.52	. .	116 26 . .	. .
	46	B. A. C. 6459 .	.	9	51 45.50	− 0.41	− 53.78	69 58 8.90	+ 4 11.42	+ 2 30.5	18 50 51.31	− 4.73	121 11 12.0	+ 8.3
	47	B. A. C. 6499 .	.	9	57 49.40	− 0.41	− 53.78	69 58 8.90	+ 5 54.21	+ 2 30.8	18 56 55.21	− 4.75	121 12 55.1	+ 9.0
	48	ζ Aquilæ . . .	.	9	0 57.18	− 0.53	**− 53.78**	25 8 10.40	+ 3 20.95	+ 26.0	19 0 2.87	. .	76 18 18.6	− 2.1
	49	d Sagittarii . .	.	9	11 42.47	− 0.43	**− 53.83**	57 58 7.90	+ 3 28.31	+ 1 28.1	19 10 48.24	. .	109 9 25.5	− 3.0
	50	ρ Sagittarii . .	.	9	15 48.31	− 0.43	− 53.80	56 52 12.25	+ 3 49.23	+ 1 24.5	19 14 54.08	− 4.36	108 3 47.2	+13.7

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
3	30.14	70.0	68.5	ZENITH-POINT CORR.					
5	30.05	79.3	77.8	″					
10	30.04	77.7	76.7						
11	30.02	75.0	73.0	16. One bisection. 1 to 3 + 51.69					
30	30.02	72.0	71.2	10. Three bisections. 5 to 30 + 50.35					
31	30.00	79.0	80.0	31 to 37 + 49.24					
38	29.92	77.5	76.5	38 to 50 + 50.10					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
August														
16, E.	1	δ Aquilæ . . .	.	9	20 31.11	— 0.49	— **53.77**	35 56 12.45	+ 3 35.13	+ 40.1	19 19 36.81	. .	87 6 48.9	— 2.8
	2	κ Aquilæ . . .	.	9	31 31.01	— 0.46	— **53.85**	46 6 12.05	+ 3 28.71	+ 57.4	19 30 36.73	. .	97 16 59.4	— 2.6
	3	Anonymous . .	.	9	37 21.13	— 0.46	— 53.82	44 4 7.50	+ 3 14.41	+ 53.5	19 36 26.85	— 4.11	95 14 36.6	+17.9
	4	γ Aquilæ . . .	.	9	41 37.18	— 0.51	— **53.81**	28 30 12.25	+ 2 55.82	+ 30.0	19 40 42.84	. .	79 39 59.3	— 4.3
	5	λ Ursæ Minoris .	.	3	43 36.03	—21.45	— 53.83	309 54 . .	. . .	. .	19 42 20.75	. .	1 3 . .	. .
	6	β Aquilæ . . .	.	9	50 29.30	— 0.50	— **53.83**	32 42 12.08	+ 3 42.11	+ 35.5	19 49 34.96	. .	83 52 50.9	— 2.4
	7	τ Aquilæ . . .	.	9	59 20.79	— 0.50	— **53.77**	31 52 14.55	+ 3 41.12	+ 34.4	19 58 26.44	. .	83 2 51.3	— 2.7
17, W.	8	μ Sagittarii . .	.	9	7 42.57	— 0.47	— **55.47**	59 54 4.75	+ 3 6.21	+ 1 34.8	18 6 46.68	. .	111 5 7.0	— 4.3
	9	η Serpentis . .	.	9	16 11.99	— 0.50	— **55.47**	41 44 9.95	+ 4 5.55	+ 49.2	18 15 16.04	. .	92 55 25.9	— 3.4
	10	Lalande 33895 .	.	9	18 5.44	— 0.53	— 55.46	26 50 8.85	+ 4 21.79	+ 28.0	18 17 9.45	— 3.49	78 1 19.8	+15.9
	11	D. M.+72°, 325, S. P.	.	9	26 0.80	+ 0.84	— 55.48	291 28 5.92	+ 2 55.72	— 2 18.7	6 25 6.16	— 3.73	342 35 4.1	+18.3
	12	1 Aquilæ . . .	.	9	29 47.02	— 0.49	— **55.41**	47 8 10.50	+ 3 45.58	+ 59.4	18 28 51.04	. .	98 19 16.7	— 3.0
	13	α Lyræ	.	9	33 55.87	— 0.66	— **55.48**	0 10 12.90	+ 2 33.28	+ 0.2	18 32 59.70	. .	51 19 7.6	— 2.8
	14	51 Cephei, S. P.	.	3	45 41.17	+ 6.77	— 55.55	306 4 4.50	+ 4 4.35	— 1 15.4	6 44 52.39	. .	357 13 14.6	— 1.9
	15	β Lyræ	.	9	46 42.86	— 0.63	— **55.53**	5 36 . .	. . .	. .	18 45 46.68	. .	56 46 . .	. .
	16	σ Sagittarii . .	.	9	48 57.46	— 0.47	— **55.56**	65 14 9.10	+ 3 47.79	+ 1 59.2	18 48 1.43	. .	116 26 17.3	— 4.1
	17	Weisse (2) 1757	.	9	58 43.64	— 0.56	— 55.59	19 20 8.78	+ 3 23.97	+ 19.4	18 57 47.49	— 3.54	70 30 13.4	+19.8
18, W.	18	π Aquarii . . .	.	9	19 32.71	— 0.43	— **13.08**	38 2 5.78	+ 3 35.39	+ 44.3	22 19 19.17	. .	89 12 46.7	— 2.9
	19	η Aquarii . . .	.	9	29 35.24	— 0.43	— **13.11**	39 32 7.05	+ 3 47.38	+ 46.8	22 29 21.70	. .	90 43 2.4	— 2.7
	20	ζ Pegasi . . .	.	9	35 52.27	— 0.45	— **13.06**	28 36 7.08	+ 3 35.67	+ 30.9	22 35 38.71	. .	79 46 34.9	— 3.4
	21	ι Cephei . . .	.	9	45 48.60	— 0.88	— 13.11	333 16 5.92	+ 2 55.16	— 28.4	22 45 34.61	. .	24 24 53.9	— 1.6
	22	α Piscis Australis .	.	9	51 25.61	— 0.40	— **13.20**	69 2 7.72	+ 3 24.97	+ 2 27.0	22 51 12.10	. .	120 14 20.9	— 1.0
	23	Weisse 1079 .	.	9	53 40.46	— 0.41	— 13.11	52 30 9.75	+ 3 56.88	+ 1 13.8	22 53 26.94	— 4.13	103 41 41.6	+27.4
20, W.	24	μ Sagittarii . .	.	9	6 59.46	— 0.70	— **12.17**	59 53 59.45	+ 3 9.78	+ 1 37.5	18 6 46.60	. .	111 5 7.9	— 3.4
	25	η Serpentis . .	.	9	15 28.74	— 0.64	— **12.11**	41 44 4.88	+ 4 9.79	+ 50.6	18 15 15.94	. .	92 55 26.5	— 2.6
	26	B. A. C. 6259 .	.	9	20 35.20	— 0.80	— 12.16	77 48 1.00	+ 5 6.05	+ 4 17.6	18 20 22.24	— 4.92	129 3 45.8	+ 2.7
	27	D. M.+72°, 325, S. P.	.	9	25 19.13	— 0.24	— 12.16	291 27 59.38	+ 3 8.56	— 2 22.7	6 25 6.73	— 3.94	342 35 6.4	+18.9
	28	1 Aquilæ . . .	.	9	29 3.91	— 0.66	— **12.16**	47 8 5.52	+ 3 47.68	+ 1 1.2	18 28 51.09	. .	98 19 15.6	— 4.0
	29	α Lyræ	.	9	33 12.46	— 0.59	— **12.19**	0 10 3.80	+ 2 40.76	+ 0.2	18 32 59.71	. .	51 19 6.0	— 3.8
	30	B. A. C. 6389 .	.	9	41 38.56	— 0.76	— 12.16	71 36 4.52	+ 4 57.02	+ 2 49.6	18 41 25.64	— 4.71	122 50 12.3	+ 6.7
	31	51 Cephei, S. P.	.	5	45 5.02	+ 0.73	— 12.16	306 4 . .	. . .	. .	6 44 53.59	. .	357 13 . .	. .
	32	σ Sagittarii . .	.	9	48 14.31	— 0.73	— **12.18**	65 14 3.95	+ 3 50.00	+ 2 2.8	18 48 1.42	. .	116 26 18.0	— 3.5
	33	Weisse (2) 1757	.	9	58 0.34	— 0.60	— 12.16	19 20 5.20	+ 3 25.52	+ 20.0	18 57 47.58	— 3.50	70 30 11.9	+20.3
W.	34	ε Canis Majoris .	.	9	54 13.29	— 0.80	— **11.97**	67 36 7.20	+ 3 52.75	+ 2 16.9	6 54 0.62	. .	118 48 38.1	— 3.8
	35	δ Canis Majoris .	.	9	3 49.45	— 0.78	— **11.80**	65 0 7.55	+ 3 49 94	+ 2 0.9	7 3 36.80	. .	116 12 19.6	— 2.8
	36	a^2 Geminorum . .	.	9	27 18.96	— 0.62	— **11.82**	6 42 1.62	+ 2 54.22	+ 6.7	7 27 6.48	. .	57 51 23.7	— 2.6
	37	α Canis Minoris .	.	6	33 21.88	— 0.67	— **11.88**	33 17 59.42	+ 3 31.07	+ 37.0	7 33 9.35	. .	84 28 28.7	— 2.6
	38	β Geminorum . .	.	9	38 20.31	— 0.63	— **11.85**	10 32 . .	. . .	. .	7 38 7.82	. .	61 42 . .	. .
21	39	Sun I, N. . .	.	9	1 42.97	— 0.66	— 11.83	26 32 1.60	+ 5 2.48	+ 27.7	10 1 30.48	+64.97	77 43 53.0	. .
	40	Sun II . . .	.	5	3 52.92	— 0.66	— 11.83	26 48 . .	. . .	. .	10 3 40.43	—64.98	78 0 . .	. .
	41	α Draconis . . .	.	9	1 23.98	— 0.78	— 11.75	333 53 57.08	+ 3 37.81	— 26.9	14 1 11.45	. .	25 3 29.2	— 1.8
	42	α Bootis . . .	.	9	10 31.23	— 0.71	— **11.79**	19 2 0.78	+ 3 28.99	+ 19.1	14 10 18.76	. .	70 12 10.1	— 1.7
	43	ρ Bootis . . .	.	9	26 58.93	— 0.70	— **11.72**	7 56 0.75	+ 4 1.81	+ 7.8	14 26 46.47	. .	59 6 31.6	— 1.5
	44	ε Bootis . . .	.	9	40 4.44	— 0.71	— **11.72**	11 15 56.50	+ 3 4.89	+ 11.0	14 39 51.97	. .	62 25 33.6	— 2.7
	45	a^2 Libræ . . .	.	9	44 36.50	— 0.78	— **11.78**	54 21 56.10	+ 3 35.18	+ 1 17.0	14 44 23.96	. .	105 33 9.5	— 1.9
	46	β Ursæ Minoris .	.	6	51 14.27	— 0.92	— 11.76	324 12 . .	. . .	. .	14 51 1.59	. .	15 22 . .	. .
	47	β Bootis . . .	.	9	57 44.18	— 0.71	— **11.80**	357 58 2.72	+ 4 5.44	— 1.9	14 57 31.71	. .	49 8 27.5	— 1.5
	48	Moon I, N. . .	.	9	41 4.57	— 0.80	— 11.75	58 45 58.05	+ 2 40.18	+ 1 31.2	15 40 52.02	+67.32	109 56 30.6	. .
22, W.	49	α Aquarii . . .	.	9	59 59.81	— 0.69	— **11.54**	39 42 17.45	+ 3 39.61	+ 47.0	21 59 47.60	. .	90 53 5.3	— 2.1
	50	θ Aquarii . . .	.	9	10 52.89	— 0.72	— **11.53**	47 12 13.18	+ 2 9.17	+ 1 1.0	22 10 40.65	. .	98 21 44.6	— 2.4

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
7	29.90	77.0	75.5
8	29.93	78.9	77.3
17	29.94	78.1	76.4
18	30.10	70.4	66.7
21	30.10	69.3	66.2
24	30.31	71.8	69.6
33	30.31	69.3	67.5
34	30.35	68.9	70.5
38	30.36	72.2	74.8
40	30.33	78.6	81.6
41	30.27	80.7	83.6
48	30.26	79.3	80.2
50	30.14	70.4	67.7

For summary of the constants of reduction see page 3.

22, 28. One bisection.
48. Five bisections.

ZENITH-POINT CORR.

	″
1 to 7	+ 50.10
8 to 17	+ 49.71
18 to 23	+ 50.67
24 to 33	+ 51.42
34 to 39	+ 51.36
41 to 48	+ 50.41
49 to 50	+ 51.50

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
39	— 3.9	+ 15 50.7	.	+ 15 46.8
.	. .	. .	.	. .
48	— 47 46.2	+ 15 17.5	.	— 32 28.7

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
August 22, W.	1	π Aquarii		9	19 31.40	— 0.68	**— 11.49**	38 2 9.58	+ 3 30.85	+ 44.3	22 19 19.20	. .	89 12 45.9	— 3.2
	2	226 Cephei		9	30 31.20	— 0.33	— 11.53	323 14 6.40	+ 2 50.78	— 42.1	22 30 19.34	. .	14 22 36.3	+ 0.4
	3	ζ Pegasi		9	35 50.96	— 0.65	**— 11.51**	28 36 9.88	+ 3 33.00	+ 30.9	22 35 38.78	. .	79 46 35.0	— 2.7
	4	α Piscis Australis		9	51 24.44	— 0.85	**— 11.53**	69 2 9.12	+ 3 22.77	+ 2 26.8	22 51 12.05	. .	120 14 19.9	— 2.2
	5	α Pegasi		9	59 9.39	— 0.63	**— 11.57**	24 16 6.50	+ 2 25.10	+ 25.5	22 58 57.22	. .	75 25 18.3	— 2.6
	6	Weisse 57[1]		6	6 5.45	— 0.75	— 11.55	51 22 9.78	+ 4 10.74	+ 1 10.8	23 5 53.15	— 4.14	102 33 52.5	+27.8
	7	Weisse 57[2]		5	6 5.74	— 0.75	— 11.55	51 22 9.78	+ 4 12.53	+ 1 10.8	23 5 53.44	— 4.14	102 33 54.3	+27.8
23, W.	8	ζ Canis Majoris		9	3 49.43	— 0.74	**— 11.76**	65 0 10.30	+ 3 50.62	+ 1 58.3	7 3 36.94	. .	116 12 20.4	— 1.5
	9	δ Geminorum		9	13 19.26	— 0.66	**— 11.76**	16 38 11.30	+ 3 24.15	+ 16.6	7 13 6.83	. .	67 48 13.2	— 2.0
	10	α[1] Geminorum		6	27 18.67	— 0.66	— 11.79	6 42 12.52	+ 2 48.55	+ 6.5	7 27 6.22	— 2.38	57 51 28.8	—11.9
	11	α[2] Geminorum		5	27 19.03	— 0.66	**— 11.78**	6 42 12.52	+ 2 44.99	+ 6.5	7 27 6.58	. .	57 51 25.2	— 1.2
	12	α Canis Minoris		9	33 21.89	— 0.67	**— 11.83**	33 18 11.20	+ 3 21.48	+ 36.3	7 33 9.42	. .	84 28 30.2	— 1.0
	13	β Geminorum		9	38 20.36	— 0.66	**— 11.80**	10 32 11.85	+ 2 51.28	+ 10.3	7 38 7.89	. .	61 41 34.6	— 1.2
24	14	Sun I, N.		9	12 46.59	— 0.66	— 12.07	27 34 2.40	+ 4 0.32	+ 28.6	10 12 33.86	+64.72	78 44 52.5	. .
W.	15	δ Canis Majoris		8	3 49.94	— 0.75	**— 12.24**	65 0 8.48	+ 3 50.65	+ 1 58.4	7 3 36.94	. .	116 12 18.7	— 3.1
	16	δ Geminorum		9	13 19.79	— 0.65	**— 12.28**	16 38 6.25	+ 3 29.30	+ 16.6	7 13 6.89	. .	67 48 13.4	— 1.8
	17	α[2] Geminorum		9	27 19.49	— 0.66	**— 12.21**	6 42 9.58	+ 2 47.08	+ 6.5	7 27 6.57	. .	57 51 24.4	— 2.1
	18	α Canis Minoris		9	33 22.36	— 0.67	**— 12.28**	33 18 7.30	+ 3 24.43	+ 36.4	7 33 9.43	. .	84 28 29.3	— 1.8
	19	β Geminorum		9	38 20.84	— 0.65	**— 12.27**	10 32 7.50	+ 2 54.93	+ 10.3	7 38 7.93	. .	61 41 33.9	— 1.9
25	20	Sun I, N.		9	16 27.31	— 0.66	— 12.28	27 54 6.60	+ 4 36.40	+ 29.0	10 16 14.37	+64.67	79 5 33.2	. .
	21	Sun II		9	18 36.66	— 0.66	— 12.28	28 10 . .	. . .	. .	10 18 23.72	—64.68	79 21 . .	. .
	22	μ Herculis		9	42 6.26	— 0.66	**— 12.29**	11 2 1.90	+ 3 40.52	+ 10.8	17 41 53.25	. .	62 12 14.4	— 2.5
	23	Weisse 912		9	46 53.10	— 0.68	— 12.35	37 28 5.18	+ 4 31.07	+ 42.5	17 46 40.07	— 3.47	88 39 39.9	+11.5
	24	γ[2] Sagittarii		9	58 31.21	— 0.76	**— 12.39**	69 12 2.65	+ 4 32.16	+ 2 25.2	17 58 18.10	. .	120 25 21.2	— 2.7
	25	μ Sagittarii		9	6 59.60	— 0.73	**— 12.34**	50 54 . .	. . .	. .	18 6 46.52	. .	111 5 . .	. .
	26	δ Ursæ Minoris		5	10 31.28	— 2.62	— 12.35	312 14 . .	. . .	. .	18 10 16.31	. .	3 23 . .	. .
	27	η Serpentis		9	15 28.99	— 0.69	**— 12.37**	41 44 . .	. . .	. .	18 15 15.95	. .	92 55 . .	. .
28, W.	28	γ[2] Sagittarii		9	58 32.53	— 0.79	**— 13.73**	69 12 11.48	+ 4 21.42	+ 2 27.8	17 58 17.95	. .	120 25 21.9	— 2.0
	29	Weisse 46		9	5 4.41	— 0.64	— 13.78	35 32 6.88	+ 2 27.40	+ 40.3	18 4 49.99	— 3.47	86 41 35.8	+13.7
	30	B. A. C. 6192		9	10 23.46	— 0.81	— 13.77	72 12 6.50	+ 4 43.43	+ 2 54.6	18 10 8.88	— 4.53	123 26 5.7	+ 2.7
	31	B. A. C. 6204		.	. . . .	. .	. .	72 12 6.50	+ 0 57.61	+ 2 54.1	18 13.2	. .	123 22 19.4	+ 3.1
	32	B. A. C. 6231		9	15 35.83	— 0.59	— 13.76	16 54 7.28	+ 4 8.78	+ 17.2	18 15 21.48	— 3.34	68 4 54.5	+16.8
	33	1 Aquilæ		9	29 5.46	— 0.68	**— 13.79**	47 8 9.02	+ 3 45.02	+ 1 1.0	18 28 51.05	. .	98 19 16.2	— 3.2
	34	Lalande 34499		9	31 50.23	— 0.65	— 13.73	39 14 3.60	+ 2 58.19	+ 46.2	18 31 35.85	— 3.68	90 24 9.2	+14.8
	35	O. Arg. S. 18605		9	37 43.56	— 0.76	— 13.72	64 16 10.52	+ 4 30.55	+ 1 57.1	18 37 29.08	— 4.36	115 28 59.4	+ 8.0
	36	Lamont 77		9	43 13.74	— 0.78	— 13.71	67 32 8.58	+ 3 30.47	+ 2 16.2	18 42 59.25	— 4.49	118 44 16.4	+ 7.6
	37	β Lyræ		9	46 0.74	— 0.56	**— 13.66**	5 36 7.82	+ 3 25.11	+ 5.6	18 45 46.48	. .	56 45 59.7	— 2.3
	38	B. A. C. 6459		9	51 5.63	— 0.80	— 13.70	69 58 7.60	+ 4 8.60	+ 2 34.4	18 50 51.13	— 4.60	121 11 11.8	+ 7.7
	39	B. A. C. 6499		9	57 9.41	— 0.80	— 13.69	69 58 7.60	+ 5 52.89	+ 2 34.6	18 56 54.92	— 4.63	121 12 56.3	+ 8.3
	40	B. A. C. 6541		9	2 14.19	— 0.86	— 13.68	78 16 8.75	+ 4 30.27	+ 4 27.1	19 1 59.65	— 5.00	129 31 27.3	+ 6.6
	41	d Sagittarii		9	11 2.53	— 0.73	**— 13.70**	57 58 7.12	+ 3 25.66	+ 1 30.4	19 10 48.14	. .	109 9 24.4	— 4.2
	42	λ Ursæ Minoris		5	42 21.05	— 0.04	— 13.61	309 54 2.82	+ 3 23.20	— 1 7.6	19 42 7.40	. .	1 2 39.6	— 1.7
29, W.	43	μ Sagittarii		9	7 0.90	— 0.85	**— 13.58**	59 53 59.62	+ 3 9.79	+ 1 37.4	18 6 46.48	. .	111 5 8.0	— 3.3
	44	B. A. C. 6226		9	15 50.03	— 0.97	— 13.59	75 4 2.42	+ 3 41.06	+ 3 29.6	18 15 35.47	— 4.65	126 17 34.3	+ 2.4
	45	B. A. C. 6249		9	19 24.89	— 0.92	— 13.60	69 14 2.00	+ 4 26.74	+ 2 28.6	18 19 10.37	— 4.43	120 27 18.5	+ 4.6
	46	1 Aquilæ		9	29 5.37	— 0.78	**— 13.62**	47 8 7.20	+ 3 46.12	+ 1 1.1	18 28 50.96	. .	98 19 15.6	— 3.7
	47	B. A. C. 6334		9	30 55.96	— 0.94	— 13.63	71 34 5.25	+ 3 25.77	+ 2 48.7	18 30 41.39	— 4.57	122 46 40.9	+ 5.0
	48	B. A. C. 6375		8	35 41.39	— 0.28	— 13.64	321 23 59.62	+ 2 43.55	— 45.1	18 35 27.47	— 0.76	12 32 19.3	+24.8
	49	O. Arg. N. 18585		4	40 39.18	— 0.52	— 13.65	344 4 6.92	+ 5 18.45	— 16.1	18 40 25.01	— 2.52	35 15 30.5	+25.1
	50	O. Arg. N. 18618		9	42 49.20	— 0.53	— 13.66	344 4 6.92	+ 2 59.95	— 16.1	18 42 35.01	— 2.54	35 13 12.0	+25.2

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
5	30.13	69.8	67.3
8	29.98	74.1	76.2
13	29.98	76.1	77.8
14	29.98	78.9	82.8
15	30.00	72.7	75.6
19	30.01	74.8	77.2
21	30.01	79.7	82.7
24	29.99	77.0	75.8
28	30.06	69.7	67.2
42	30.08	68.2	64.4
43	30.21	70.8	68.4

For summary of the constants of reduction see page 3.

6, 7, 24, 31, 39. One bisection.
42. Three bisections.

ZENITH-POINT CORR.

	″
1 to 7	+ 51.50
8 to 14	+ 51.07
15 to 20	+ 50.19
22 to 24	+ 51.12
28 to 42	+ 52.76
43 to 50	+ 52.46

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
14	— 4.1	+ 15 51.3	. .	+ 15 47.2
20	— 4.1	+ 15 51.6	. .	+ 15 47.5

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
August 29, W.	1	β Lyræ		3	46 0.82	− 0.62	**− 13.70**	5 36 6.78	+ 3 26.00	+ 5.6	18 45 46.53	. .	56 45 59.6	− 2.3
	2	B. A. C. 6455		9	50 51.07	− 0.92	− 13.68	69 46 9.05	+ 3 30.35	+ 2 33.0	18 50 36.47	− 4.58	120 58 33.6	+ 7.6
	3	O. Arg. N. 18838		5	57 32.77	− 0.55	− 13.69	348 28 8.10	+ 3 15.21	− 11.5	18 57 18.53	− 2.82	39 37 33.0	+25.5
	4	B. A. C. 6535		9	1 46.24	− 0.99	− 13.70	76 52 7.28	+ 2 34.89	+ 3 59.0	19 1 31.55	− 4.91	128 5 2.4	+ 6.8
	5	d Sagittarii		9	11 2.63	− 0.84	**− 13.70**	57 58 3.60	+ 3 29.28	+ 1 30.7	19 10 48.06	. .	109 9 24.8	− 3.8
	6	B. A. C. 6603		9	12 31.99	− 0.55	− 13.73	348 58 7.80	+ 3 28.54	− 11.0	19 12 17.71	− 2.98	40 7 46.5	+26.0
	7	B.A.C. 2320, S. P.		3	37 57.03	− 4.25	− 13.79	307 50 4.68	+ 3 4.42	− 1 13.0	7 37 38.99	− 6.80	358 58 17.3	+24.6
	8	λ Ursæ Minoris		4	42 16.92	+ 3.08	− 13.80	309 54 0.08	+ 3 26.23	− 1 7.8	19 42 6.20	. .	1 2 39.7	− 1.4
Sept. 1, W.	9	η Serpentis		9	15 30.62	− 0.78	**− 14.02**	41 44 7.45	+ 4 8.43	+ 49.4	18 15 15.82	. .	92 55 26.5	− 2.1
	10	Lalande 33895		9	17 23.93	− 0.74	− 14.02	26 50 9.08	+ 4 21.28	+ 28.1	18 17 9.17	− 3.28	78 1 19.7	+17.3
	11	1 Aquilæ		9	29 5.74	− 0.80	**− 14.01**	47 8 5.38	+ 3 50.17	+ 59.6	18 28 50.92	. .	98 19 16.4	− 2.8
	12	Lalande 34486		9	31 12.99	− 0.75	− 14.02	32 14 7.82	+ 3 48.81	+ 35.0	18 30 58.22	− 3.46	83 24 52.8	+16.9
	13	B. A. C. 6375		5	35 42.02	− 0.72	− 14.02	321 24 3.70	+ 2 37.73	− 44.1	18 35 27.28	− 0.48	12 32 18.5	+25.3
	14	51 Cephei, S. P.		5	45 12.88	− 0.09	− 14.02	306 4 9.72	+ 3 58.48	− 1 15.6	6 44 58.77	. .	357 13 13.8	+ 0.3
	15	β Lyræ		9	46 1.18	− 0.70	**− 14.04**	5 36 9.18	+ 3 22.88	+ 5.5	18 45 46.46	. .	56 45 58.8	− 2.7
	16	B. A. C. 6455		9	50 51.32	− 0.92	− 14.02	69 46 7.70	+ 3 35.89	+ 2 29.3	18 50 36.38	− 4.52	120 58 34.1	+ 7.5
	17	O. Arg. N. 18838		9	57 33.09	− 0.67	− 14.02	348 28 7.92	+ 3 14.60	− 11.2	18 57 18.40	− 2.74	39 37 32.5	+26.1
	18	B. A. C. 6530		9	59 37.98	− 0.69	− 14.02	346 44 9.72	+ 3 50.38	− 13.0	18 59 23.27	− 2.71	37 54 8.3	+26.3
	19	B. A. C. 6535		7	1 46.33	− 0.98	− 14.02	76 52 13.55	+ 2 35.51	+ 3 52.9	19 1 31.33	− 4.85	128 5 3.2	+ 6.6
	20	B. A. C. 6603		9	12 32.30	− 0.67	− 14.02	348 58 4.62	+ 3 30.03	− 10.7	19 12 17.61	− 2.90	40 7 45.1	+26.6
	21	Lalande 36715		9	21 13.34	− 0.74	− 14.02	26 2 7.30	+ 3 25.85	+ 27.1	19 20 58.58	− 3.59	77 12 21.5	+21.8
	22	B. A. C. 2320, S.P.		6	37 57.88	− 1.19	− 14.02	307 50 6.35	+ 2 59.14	− 1 11.1	7 37 42.67	− 9.55	358 58 15.6	+25.3
5, W.	23	γ² Sagittarii		9	58 35.22	− 0.61	**− 16.73**	69 12 7.68	+ 4 26.37	+ 2 26.9	17 58 17.93	. .	120 25 22.1	− 2.0
	24	Lalande 33412		9	5 13.01	− 0.57	− 16.70	22 22 6.28	+ 3 30.53	+ 23.1	18 4 55.74	− 3.05	73 32 21.1	+17.9
	25	μ Sagittarii		9	7 3.61	− 0.59	**− 16.66**	59 54 8.55	+ 3 2.94	+ 1 35.9	18 6 46.31	. .	111 5 8.6	− 2.8
	26	δ Ursæ Minoris		4	10 32.20	− 3.42	− 16.72	312 14 . .	. . .	. .	18 10 12.06	. .	3 23 . .	. .
	27	η Serpentis		9	15 33.07	− 0.57	**− 16.74**	41 44 7.82	+ 4 7.47	+ 50.1	18 15 15.76	. .	92 55 26.6	− 1.8
	28	Weisse (2) 934		9	32 37.96	− 0.60	− 16.79	5 28 5.35	+ 2 48.38	+ 5.4	18 32 20.57	− 2.84	56 37 20.3	+23.5
	29	O. Arg. N. 18618		9	42 52.36	− 0.69	− 16.83	344 4 3.35	+ 3 2.24	− 16.0	18 42 34.84	− 2.32	35 13 10.8	+26.6
	30	β Lyræ		9	46 3.81	− 0.60	**− 16.85**	5 36 9.50	+ 3 22.54	+ 5.6	18 45 46.36	. .	56 45 58.8	− 2.1
	31	B. A. C. 6470		9	50 38.33	− 0.66	− 16.86	348 16 8.55	+ 3 32.53	− 11.6	18 50 20.81	− 2.55	39 25 50.7	+26.6
14, W.	32	ε Hydræ		9	40 54.74	− 0.71	**− 20.23**	31 58 1.08	+ 4 5.71	+ 34.9	8 40 33.76	. .	83 9 2.9	− 4.4
	33	ι Ursæ Majoris		9	51 30.83	− 0.58	− 20.27	350 20 5.90	+ 3 47.06	− 9.4	8 51 9.98	. .	41 30 4.8	− 2.2
	34	α Hydræ		9	22 10.22	− 0.77	**− 20.24**	46 58 6.18	+ 3 32.09	+ 59.6	9 21 49.18	. .	98 8 59.1	− 2.2
	35	ε Leonis		9	39 32.16	− 0.65	**− 20.36**	14 30 6.80	+ 4 29.84	+ 14.5	9 39 11.24	. .	65 41 12.3	− 2.4
	36	α Leonis		9	2 28.11	− 0.69	**− 20.27**	26 18 1.22	+ 2 44.66	+ 27.5	10 2 7.15	. .	77 27 34.6	− 2.6
	37	γ¹ Leonis		6	13 50.77	− 0.66	**− 20.25**	18 23 58.62	+ 3 17.52	+ 18.5	10 13 29.84	. .	69 33 55.8	− 2.4
	38	γ² Leonis		5	13 50.92	− 0.66	− 20.27	18 23 58.62	+ 3 18.69	+ 18.5	10 13 29.99	− 1.88	69 33 57.0	−14.4
15	39	Sun I, N.		9	32 33.73	− 0.72	− 20.27	35 40 6.72	+ 3 38.24	+ 39.8	11 32 12.74	+63.98	86 50 46.0	. .
	40	Sun II, S.		9	34 41.70	− 0.72	− 20.27	36 12 8.10	+ 3 27.94	+ 40.6	11 34 20.71	−63.99	87 22 37.8	. .
	41	Mercury I, N.		9	56 19.12	− 0.76	− 20.27	46 8 0.05	+ 3 11.42	+ 57.5	12 55 58.09	+ 0.19	97 18 30.2	. .
	42	Polaris, S. P.		6	17 13.18	− 1.46	− 20.27	307 31 57.12	+ 3 47.05	− 1 11.5	1 16 51.45	. .	358 40 53.9	− 1.9
	43	α Virginis		9	19 21.73	− 0.78	**− 20.25**	49 22 5.70	+ 3 18.78	+ 1 4.4	13 19 0.68	. .	100 32 50.1	− 2.7
	44	ζ Virginis		9	29 3.78	− 0.74	**− 20.24**	38 48 4.92	+ 4 27.63	+ 44.5	13 28 42.77	. .	89 59 38.3	− 1.9
	45	Moon I, N.		9	41 31.99	− 0.80	− 20.27	52 6 . .	. . .	. .	13 41 10.92	+62.99	102 48 . .	. .
	46	η Bootis		9	49 26.59	− 0.67	**− 20.29**	19 50 3.95	+ 3 55.25	+ 20.0	13 49 5.65	. .	71 0 40.4	− 1.1
	47	α Bootis		8	10 39.34	− 0.67	**− 20.28**	19 2 3.62	+ 3 28.49	+ 19.1	14 10 18.40	. .	70 12 12.4	− 1.2
	48	Venus I, N.		9	23 30.38	− 0.81	− 20.27	55 38 4.10	+ 2 41.63	+ 1 20.6	14 23 9.30	+ 0.78	106 48 27.5	. .
	49	ρ Bootis		8	27 7.02	− 0.63	**− 20.30**	7 56 4.30	+ 4 1.43	+ 7.8	14 26 46.12	. .	59 6 34.7	− 0.8
	50	51 Cephei, S. P.		7	45 27.93	− 0.90	− 20.43	306 4 . .	. . .	. .	6 45 6.60	. .	357 13 . .	. .

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
8	30.24	68.0	65.8
10	30.06	78.3	77.4
22	30.08	77.3	76.7
27	30.19	74.2	72.3
31	30.19	73.5	70.8
32	30.00	71.0	72.3
36	30.00	73.3	74.2
40	30.00	74.9	75.8
41	30.00	76.2	77.4
49	30.01	76.9	77.7

For summary of the constants of reduction see page 3.

1, 13, 25. One bisection.
22. Three bisections.
48. Four bisections.

ZENITH-POINT CORR.

″

1 to 8 + 52.46
9 to 22 + 52.05
23 to 31 + 51.48
32 to 49 + 51.52

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
39	− 5.1	+ 15 55.8	. .	+ 15 50.7
40	− 5.2	− 15 55.9	. .	− 16 1.1
41	− 5.4	+ 2.8	. .	− 2.6
48	− 9.6	+ 11.3	. .	+ 1.7

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Sept. 15, W.	1	B. A. C. 6458		9	51 11.57	− 0.94	− 20.43	76 0 8.80	+ 5 16.94	+ 3 41.8	18 50 50.20	− 4.50	127 15 28.7	+ 4.9
	2	B. A. C. 6511		9	58 52.22	− 0.94	− 20.43	76 0 8.80	+ 3 33.32	+ 3 41.6	18 58 30.85	− 4.54	127 13 44.9	+ 5.6
	3	*d* Sagittarii		9	11 9.13	− 0.82	**− 20.47**	57 57 59.78	+ 3 34.71	+ 1 29.7	19 10 47.88	. .	109 9 25.4	− 3.6
	4	B. A. C. 6599		8	12 40.24	− 0.65	− 20.43	0 54 3.68	+ 3 36.50	+ 0.9	19 12 19.16	− 2.82	52 4 2.3	+27.6
	5	δ Aquilæ		9	19 57.60	− 0.74	**− 20.35**	35 56 5.05	+ 3 38.97	+ 40.8	19 19 36.43	. .	87 6 46.0	− 3.6
	6	Lalande 36715		4	21 19.60	− 0.71	− 20.43	26 2 2.45	+ 3 29.40	+ 27.5	19 20 58.46	− 3.38	77 12 20.5	+23.0
	7	Anonymous	10	8	31 17.16	− 0.86	− 20.44	65 28 6.40	+ 4 54.62	+ 2 3.0	19 30 55.86	− 4.29	116 41 25.2	+12.1
	8	Anonymous	9	5	31 36.67	− 0.86	− 20.44	65 28 6.40	+ 0 53.08	+ 2 2.6	19 31 15.37	− 4.29	116 37 23.3	+12.1
	9	B. A. C. 2320, S. P.		5	38 25.12	− 1.44	− 20.44	307 50 3.00	+ 3 0.76	− 1 12.2	7 38 3.24	−25.30	358 58 12.8	+28.4
	10	O. Arg. N. 19720		9	48 49.76	− 0.63	− 20.44	352 8 2.75	+ 1 47.17	− 7.8	19 48 28.69	− 2.98	43 16 3.3	+30.2
	11	B. A. C. 6865		9	53 55.62	− 0.62	− 20.44	348 14 6.45	+ 4 5.05	− 11.7	19 53 34.56	− 2.97	39 24 21.0	+30.6
	12	B. A. C. 6886		9	58 26.23	− 0.91	− 20.44	72 6 3.82	+ 4 22.30	+ 2 53.4	19 58 4.88	− 4.59	123 19 40.7	+12.5
	13	B. A. C. 6922		9	3 52.84	− 0.89	− 20.44	75 10 8.05	+ 3 33.33	+ 3 30.4	20 3 31.51	− 4.71	126 23 33.0	+12.1
	14	α² Capricorni		9	11 55.80	− 0.80	**− 20.49**	51 44 3.28	+ 2 35.54	+ 1 11.6	20 11 34.55	. .	102 54 11.6	− 3.2
	15	B. A. C. 7029 (R)			. . . .	. .	. .	172 50 5.98	+ 5 27.05	− 7.0	. . . .	. .	58 10 55.2	+29.5
	16	B. A. C. 7029			. . . .	. .	. .	7 4 3.55	+ 0 20.79	+ 7.0	20 19.2	. .	58 10 52.5	+29.5
	17	α Cygni (R)			. . . .	. .	. .	185 54 1.85	+ 4 17.96	+ 5.9	. . . .	. .	45 7 55.5	− 0.5
	18	α Cygni			. . . .	. .	. .	353 58 7.40	+ 3 31.27	− 5.9	20 37.5	. .	45 7 54.0	− 2.0
	19	D. M. +80°, 281, S. P.		8	50 37.05	− 0.66	− 20.45	299 38 2.15	+ 3 46.54	− 1 39.0	8 50 15.94	− 1.67	350 46 30.9	+27.6
	20	ζ Pegasi		9	36 0.11	− 0.72	**− 20.50**	28 36 4.32	+ 3 35.15	+ 31.1	22 35 38.91	. .	79 46 31.8	− 2.5
	21	74 Aquarii		9	47 41.41	− 0.79	− 20.48	51 2 9.02	+ 4 27.93	+ 1 10.4	22 47 20.14	− 4.32	102 14 8.6	+27.5
	22	Weisse 1047		8	52 20.99	− 0.79	− 20.48	50 34 3.38	+ 3 42.50	+ 1 9.2	22 51 59.72	− 4.31	101 45 16.3	+27.6
	23	Weisse 1156		9	56 46.86	− 0.79	− 20.48	50 42 7.28	+ 3 51.12	+ 1 9.5	22 56 25.59	− 4.31	101 53 29.1	+27.7
	24	Weisse 1232		9	59 44.68	− 0.79	− 20.48	50 52 4.95	+ 3 28.36	+ 1 9.9	22 59 23.41	− 4.31	102 3 4.4	+27.8
	25	Weisse 57¹		6	6 14.55	− 0.80	− 20.48	51 22 10.90	+ 4 11.53	+ 1 11.2	23 5 53.27	− 4.31	102 33 54.8	+27.8
	26	Weisse 57²		5	6 14.86	− 0.80	− 20.48	51 22 10.90	+ 4 12.53	+ 1 11.2	23 5 53.58	− 4.31	102 33 55.8	+27.8
	27	Weisse 185		9	11 56.04	− 0.80	− 20.48	51 10 9.02	+ 3 15.19	+ 1 10.7	23 11 34.76	− 4.30	102 20 56.1	+28.0
	28	Weisse 309		9	17 18.79	− 0.79	− 20.48	50 14 2.02	+ 3 10.85	+ 1 8.4	23 16 57.52	− 4.29	101 24 42.5	+28.1
	29	Weisse 377		9	20 54.50	− 0.79	− 20.49	49 30 8.12	+ 2 53.77	+ 1 6.6	23 20 33.22	− 4.29	100 40 29.7	+28.1
	30	Weisse 497		9	26 44.50	− 0.79	− 20.49	50 28 1.65	+ 2 58.14	+ 1 9.0	23 26 23.22	− 4.28	101 38 30.0	+28.1
	31	Weisse 586		9	30 20.26	− 0.78	− 20.49	48 14 7.52	+ 3 0.25	+ 1 3.8	23 29 58.99	− 4.28	99 24 32.8	+28.2
	32	Weisse 629		9	32 32.29	− 0.78	− 20.49	48 6 6.25	+ 2 48.27	+ 1 3.4	23 32 11.02	− 4.28	99 16 19.1	+28.2
	33	δ Sculptoris		9	43 12.36	− 0.88	− 20.49	67 34 4.05	+ 3 46.44	+ 2 17.3	23 42 50.99	− 4.34	118 46 29.0	+27.7
	34	Groom. 4163		9	49 35.61	− 0.55	− 20.49	325 6 4.42	+ 2 38.57	− 39.6	23 49 14.57	. .	16 14 24.6	− 1.4
	35	ω Piscium		9	53 40.67	− 0.72	**− 20.47**	32 36 4.90	+ 3 51.85	+ 36.5	23 53 19.46	. .	83 46 54.5	− 1.8
	36	α Andromedæ		9	2 43.19	− 0.67	**− 20.48**	10 24 3.32	+ 2 36.30	+ 10.5	0 2 22.02	. .	61 33 11.3	− 3.1
	37	γ Pegasi		9	7 35.26	− 0.71	**− 20.51**	24 18 6.05	+ 2 58.61	+ 25.8	0 7 14.05	. .	75 27 51.7	− 2.7
	38	Sappho	9	9	14 28.14	− 0.71	− 20.50	24 46 3.32	+ 0 51.57	+ 26.3	0 14 6.93	. .	75 53 42.4	− 4.3
	39	44 Piscium		9	19 46.72	− 0.74	− 20.50	37 32 4.60	+ 3 10.18	+ 43.8	0 19 25.48	− 4.27	88 42 19.8	+27.3
18, W.	40	B. A. C. 6259		8	20 43.26	− 0.94	− 20.63	77 48 9.95	+ 5 5.96	+ 4 12.4	18 20 21.69	− 4.37	129 3 49.5	+ 1.4
	41	1 Aquilæ		9	29 12.11	− 0.79	**− 20.66**	47 8 9.32	+ 3 46.30	+ 1 0.0	18 28 50.68	. .	98 19 16.8	− 2.2
	42	B. A. C. 6334		9	31 2.67	− 0.90	− 20.64	71 34 6.32	+ 3 31.09	+ 2 45.6	18 30 41.13	− 4.19	122 46 44.2	+ 4.5
	43	Weisse (2) 934		8	32 41.59	− 0.70	− 20.64	5 28 6.42	+ 2 47.30	+ 5.4	18 32 20.25	− 2.54	56 37 20.3	+24.6
	44	51 Cephei, S. P.		5	45 27.56	+ 0.32	− 20.65	306 4 1.42	+ 4 4.33	− 1 16.0	6 45 7.23	. .	357 13 11.0	0.0
	45	β Lyræ		9	46 7.44	− 0.72	**− 20.66**	5 36 15.30	+ 3 15.72	+ 5.5	18 45 46.09	. .	56 45 57.7	− 2.0
	46	B. A. C. 6458		9	51 11.80	− 0.93	− 20.65	76 0 9.08	+ 5 17.21	+ 3 40.2	18 50 50.22	− 4.45	127 15 27.7	+ 4.9
	47	B. A. C. 6511		9	58 52.50	− 0.93	− 20.66	76 0 9.08	+ 3 36.08	+ 3 39.9	18 58 30.91	− 4.48	127 13 46.3	+ 5.6
	48	ζ Aquilæ		9	0 23.77	− 0.73	**− 20.63**	25 8 7.55	+ 3 20.80	+ 26.2	19 0 2.38	. .	76 18 15.8	− 1.8
	49	B. A. C. 6599		9	12 40.63	− 0.70	− 20.67	0 54 3.80	+ 3 37.15	+ 0.9	19 12 19.26	− 2.76	52 4 3.1	+28.0
	50	μ² Sagittarii		9	15 23.41	− 0.83	− 20.67	57 20 11.10	+ 3 19.42	+ 1 26.8	19 15 1.91	− 3.96	108 31 18.5	+13.4
	51	Lalande 37079, 0	7.5	9	30 22.33	− 0.83	− 20.68	57 48 5.55	+ 6 27.01	+ 1 28.6	19 30 0.82	− 4.03	109 2 22.4	+14.5

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
1	30.04	71.8	70.3	ZENITH-POINT CORR.					
19	30.06	66.8	64.7	″					
20	30.08	66.2	63.7						
39	30.09	64.7	62.7	16, 43. One bisection. — 1 to 39 + 52.00					
41	30.03	75.3	74.3	9. Three bisections. — 40 to 51 + 52.49					
				38. Four bisections.					

Date and Hour.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Sept. 19. W.	1	Anonymous	8	6	30 46.72	− 0.83	− 20.68	57 48 5.55	+ 3 34.90	+ 1 28.4	19 30 25.21	− 4.03	108 59 30.0	+14.5
	2	Lalande 37303	8	9	33 3.78	− 0.70	− 20.69	358 8 11.70	+ 2 47.67	− 1.8	19 32 42.39	− 2.88	49 17 18.8	+29.4
	3	17¹ Cygni		6	42 21.42	− 0.70	− 20.69	5 22 5.98	+ 3 43.03	+ 5.3	19 42 0.03	− 3.10	56 32 15.5	+28.8
	4	17² Cygni		5	42 23.43	− 0.70	− 20.69	5 22 5.98	+ 3 34.57	+ 5.3	19 42 2.04	− 3.10	56 32 7.1	+28.8
	5	Weisse (2) 1501		7	47 28.37	− 0.72	− 20.70	14 8 4.92	+ 3 25.89	+ 14.1	19 47 6.95	− 3.29	65 18 6.1	+27.5
	6	B. A. C. 6843		9	52 29.51	− 0.92	− 20.70	74 22 9.25	+ 3 38.43	+ 3 17.0	19 52 7.89	− 4.60	125 35 25.9	+11.2
	7	B. A. C. 6886		9	58 26.64	− 0.90	− 20.71	72 6 5.38	+ 4 25.45	+ 2 51.5	19 58 5.03	− 4.54	123 19 43.5	+12.4
	8	31 Cygni (R)			. . . .	. .	. .	187 26 5.68	+ 3 40.12	+ 7.3	. . . .	. .	43 36 28.1	+31.4
	9	31 Cygni			. . . .	. .	. .	352 28 7.78	+ 2 2.95	− 7.3	20 10.0	. .	43 36 24.6	+31.4
	10	B. A. C. 7029 (R)			. . . .	. .	. .	172 52 8.28	+ 3 25.83	− 6.9	. . . .	. .	58 10 54.0	+30.0
	11	B. A. C. 7029			. . . .	. .	. .	7 2 10.28	+ 2 15.30	+ 6.9	20 19.2	. .	58 10 53.7	+30.0
	12	θ Aquarii		9	11 2.29	− 0.79	**− 20.83**	47 12 8.40	+ 2 13.16	+ 1 0.6	22 10 40.69	. .	98 21 43.4	− 3.0
	13	Groom. 3756		9	17 23.17	− 0.76	− 20.81	322 56 6.38	+ 4 2.41	− 42.2	22 17 1.60	− 6.73	14 5 47.8	+28.8
	14	η Aquarii		9	29 43.41	− 0.77	**− 20.82**	39 32 5.98	+ 3 47.14	+ 46.4	22 29 21.82	. .	90 43 0.7	− 2.1
	15	ζ Pegasi		9	36 0.43	− 0.74	**− 20.80**	28 36 7.88	+ 3 32.15	+ 30.7	22 35 38.87	. .	79 46 31.9	− 2.1
	16	74 Aquarii		9	47 41.86	− 0.80	− 20.83	51 2 10.20	+ 4 26.99	+ 1 9.5	22 47 20.23	− 4.32	102 14 7.9	+27.5
	17	Weisse 1047		9	52 21.26	− 0.80	− 20.84	50 34 7.15	+ 3 38.29	+ 1 8.3	22 51 59.62	− 4.32	101 45 14.9	+27.5
	18	Weisse 1079		9	53 48.76	− 0.81	− 20.84	52 30 11.42	+ 3 56.45	+ 1 13.2	22 53 27.11	− 4.33	103 41 42.3	+27.5
	19	Weisse 1204		9	58 44.73	− 0.80	− 20.84	51 38 10.08	+ 2 39.78	+ 1 10.9	22 58 23.09	− 4.32	102 48 22.0	+27.6
	20	Weisse 1261		9	1 39.56	− 0.80	− 20.84	51 14 8.70	+ 4 29.73	+ 1 10.0	23 1 17.92	− 4.32	102 26 9.6	+27.7
	21	Weisse 49		9	5 45.60	− 0.80	− 20.85	49 58 8.98	+ 2 46.92	+ 1 6.8	23 5 23.95	− 4.31	101 8 23.9	+27.9
	22	ψ Aquarii		9	10 8.51	− 0.79	− 20.85	48 32 10.20	+ 3 44.41	+ 1 3.6	23 9 46.87	− 4.31	99 43 19.4	+28.1
	23	Weisse 265		9	15 10.16	− 0.80	− 20.85	49 58 7.38	+ 4 36.35	+ 1 6.9	23 14 48.51	− 4.31	102 10 11.8	+28.0
	24	Weisse 377		9	20 54.86	− 0.80	− 20.86	49 30 8.30	+ 2 53.34	+ 1 5.8	23 20 33.20	− 4.30	100 40 28.6	+28.1
	25	Weisse 497		9	26 44.90	− 0.80	− 20.86	50 28 3.50	+ 2 58.50	+ 1 8.1	23 26 23.24	− 4.30	101 38 31.3	+28.1
	26	Weisse 586		9	30 20.66	− 0.79	− 20.87	48 14 5.95	+ 3 3.53	+ 1 3.0	23 29 59.00	− 4.30	99 24 33.7	+28.2
	27	Weisse 629		9	32 32.67	− 0.79	− 20.87	48 6 8.75	+ 2 46.68	+ 1 2.6	23 32 11.01	− 4.29	99 16 19.2	+28.3
S.	28	α Leonis		9	2 28.87	− 0.75	**− 20.91**	26 18 10.70	+ 2 35.34	+ 27.3	10 2 7.19	. .	77 27 34.5	− 3.1
	29	γ¹ Leonis		9	13 51.61	− 0.75	**− 20.95**	18 24 7.68	+ 3 8.75	+ 18.4	10 13 29.93	. .	69 33 56.0	− 2.7
19	30	Sun I, S.		9	46 56.02	− 0.75	− 20.96	37 44 3.60	+ 4 27.89	+ 42.4	11 46 34.31	+63.97	88 55 35.1	. .
	31	Sun II, N.		9	49 3.96	− 0.75	− 20.96	37 12 7.08	+ 4 32.20	+ 41.6	11 48 42.25	−63.97	88 23 42.1	. .
	32	α² Can. Venat.		9	50 53.22	− 0.78	**− 20.99**	359 52 10.78	+ 4 14.12	− 0.1	12 50 31.47	. .	51 2 46.0	− 1.7
	33	Mercury C		9	15 16.71	− 0.76	− 20.98	48 38 9.50	+ 3 13.44	+ 1 1.7	13 14 54.97	+ 0.04	99 48 45.8	. .
	34	Polaris, S. P.		6	17 10.60	+ 7.63	− 20.98	307 32 8.42	+ 3 34.03	− 1 10.4	1 16 57.25	. .	358 40 53.2	− 3.9
	35	α Virginis		9	19 22.41	− 0.77	**− 20.96**	49 22 . .	. . . .	. . . .	13 19 0.66	. .	100 33 . .	. .
	36	Venus I, N.		9	39 28.76	− 0.78	− 20.99	57 14 10.35	+ 3 30.15	+ 1 24.1	14 39 6.99	+ 0.83	108 25 25.8	. .
	37	Moon I, N.		9	13 34.27	− 0.79	− 21.10	60 2 9.00	+ 4 10.60	+ 1 34.8	17 13 12.38	+68.79	111 14 15.6	. .
	38	α Ophiuchi		9	29 52.00	− 0.76	**− 21.13**	26 10 11.78	+ 3 55.06	+ 27.0	17 29 30.12	. .	77 20 55.0	− 1.9
	39	O. Arg. N. 17464		9	39 44.18	− 1.17	− 21.13	326 20 7.65	+ 2 37.45	− 36.4	17 39 21.88	+ 1.37	17 28 29.9	+23.5
	40	γ² Sagittarii		9	58 39.57	− 0.82	**− 21.15**	69 12 7.38	+ 4 29.83	+ 2 23.7	17 58 17.59	. .	120 25 22.1	− 2.1
	41	B. A. C. 6145 (S)		9	2 55.19	− 0.82	− 21.16	69 32 10.02	+ 3 44.77	+ 2 26.2	18 2 33.21	− 3.96	120 44 42.2	+ 2.6
	42	Weisse (2) 1218		9	41 44.03	− 0.77	− 21.21	12 18 5.98	+ 2 41.83	+ 12.0	18 41 22.05	− 2.77	63 27 21.0	+23.9
	43	B. A. C. 6414		9	45 33.36	− 0.82	− 21.21	69 40 13.50	+ 3 11.67	+ 2 27.7	18 45 11.33	− 4.17	120 52 14.1	+ 6.5
	44	Weisse (2) 1528		9	51 18.89	− 0.76	− 21.22	20 52 11.05	+ 3 11.17	+ 21.0	18 50 56.91	− 3.03	72 2 4.4	+22.6
	45	Lalande 35560		9	57 17.74	− 0.76	− 21.23	37 12 8.55	+ 4 18.89	+ 41.9	18 56 55.75	− 3.41	88 23 30.5	+18.4
	46	Lalande 36268²		9	11 27.93	− 0.76	− 21.25	24 30 8.90	+ 2 26.56	+ 25.2	19 11 5.92	− 3.23	75 39 21.9	+23.1
	47	ρ¹ Sagittarii		9	15 15.70	− 0.78	− 21.25	56 52 9.58	+ 3 54.25	+ 1 24.7	19 14 53.67	− 3.94	108 3 49.7	+13.5
	48	Weisse 728		9	30 29.99	− 0.76	− 21.27	23 28 7.30	+ 3 34.86	+ 24.0	19 30 7.96	− 3.33	74 38 27.4	+24.6
	49	λ Ursæ Minoris		3	42 17.93	−11.11	− 21.28	309 54 7.90	+ 3 11.65	− 1 5.9	19 41 45.54	. .	1 2 34.9	− 1.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
8	30.04	73.7	72.2		ZENITH-POINT CORR.	30	− 5.4	− 15 56.4	.	− 16 1.8
11	30.05	73.6	71.8			31	− 5.3	+ 15 56.5	.	+ 15 51.2
12	30.05	71.8	70.1		″	33	− 5.8	. .	+ 0.3	− 5.5
27	30.05	70.6	68.9	2, 36. One bisection.	1 to 27 + 52.49	36	− 10.1	+ 11.8	.	+ 1.7
28	30.08	77.8	78.8	34, 37. Three bisections.	28 to 36 + 50.17	37	− 48 59.6	+ 15 28.5	.	− 33 31.1
30	30.08	81.9	83.7	33. Four bisections.	37 to 49 + 51.21					
32	30.06	84.2	86.5							
36	30.03	86.2	88.0							
37	30.02	82.8	82.5							
46	30.02	79.8	78.1							

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Sept. 19, S.	1	β Aquilæ		9	49 56.62	− 0.76	**− 21.23**	32 42 8.35	+ 3 42.39	+ 35.6	19 49 34.57	. .	83 52 47.5	− 3.0
	2	τ Aquilæ		9	58 48.23	− 0.76	**− 21.27**	31 52 12.15	+ 3 41.12	+ 34.5	19 58 26.17	. .	83 2 49.0	− 2.0
	3	α^2 Capricorni		9	11 56.54	− 0.78	**− 21.30**	51 44 8.30	+ 2 33.44	+ 1 10.2	20 11 34.44	. .	102 54 13.1	− 1.7
	4	ν Cygni		9	53 12.36	− 0.80	**− 21.48**	358 8 . .	. . .	. .	20 52 50.19	. .	49 17 . .	. .
W.	5	α Hydræ		9	22 11.91	− 0.79	**− 21.81**	46 58 8.35	+ 3 29.87	+ 59.2	9 21 49.31	. .	98 8 58.6	− 2.6
	6	θ Ursæ Majoris		9	25 22.50	− 0.84	− 21.82	346 38 9.82	+ 3 12.75	− 13.1	9 24 59.84	. .	37 47 30.7	− 1.2
	7	ε Leonis		9	39 33.81	− 0.77	**− 21.79**	14 30 10.18	+ 4 26.92	+ 14.4	9 39 11.22	. .	65 41 12.7	− 2.7
	8	μ Leonis		9	46 27.81	− 0.77	**− 21.89**	12 16 9.22	+ 3 47.79	+ 12.0	9 46 5.22	. .	63 26 30.2	− 3.0
	9	α Leonis		9	2 29.82	− 0.77	**− 21.83**	26 18 5.65	+ 2 41.25	+ 27.2	10 2 7.22	. .	77 27 35.3	− 2.4
	10	γ^1 Leonis		3	13 52.51	− 0.77	**− 21.81**	18 24 3.20	+ 3 13.82	+ 18.3	10 13 29.90	. .	69 33 56.5	− 2.3
	11	γ^2 Leonis		4	13 52.77	− 0.77	− 21.84	18 24 3.20	+ 3 14.95	+ 18.3	10 13 30.16	− 1.96	69 33 57.7	−15.2
	12	Comet 1882 II		9	14 41.60	− 0.78	− 21.86	39 24 5.42	+ 3 16.91	+ 45.0	11 14 18.96	. .	90 34 28.5	. .
20	13	Sun I, N.		9	50 32.44	− 0.78	− 21.88	37 36 7.95	+ 3 50.72	+ 42.1	11 50 9.78	+63.92	88 47 2.0	. .
	14	Sun II, S.		9	52 40.29	− 0.78	− 21.88	38 8 1.82	+ 3 50.05	+ 43.0	11 52 17.63	−63.93	89 18 56.1	. .
	15	α^2 Can. Venat.		9	50 54.16	− 0.80	**− 21.92**	359 52 4.08	+ 4 19.23	− 0.1	12 50 31.45	. .	51 2 44.4	− 3.5
	16	Polaris, S. P.		9	17 11.01	+ 6.89	− 21.92	307 31 59.72	+ 3 42.70	− 1 10.6	1 16 55.98	. .	358 40 53.0	− 4.5
	17	η Bootis		9	49 28.28	− 0.77	− 21.92	19 50 1.70	+ 3 58.48	− 19.7	13 49 5.58	. .	71 0 41.1	− 1.0
S.	18	Comet 1882 II		9	9 34.27	− 0.77	− 22.56	40 10 14.32	+ 1 58.61	+ 47.0	11 9 10.94	. .	91 19 21.1	. .
21	19	Sun I, S.		9	54 8.47	− 0.77	− 22.56	38 32 8.25	+ 3 2.50	+ 44.2	11 53 45.14	+63.96	89 42 16.2	. .
	20	Sun II, N.		9	56 16.40	− 0.77	− 22.56	38 0 9.32	+ 3 8.25	+ 43.3	11 55 53.07	−63.97	89 10 22.1	. .
	21	α^2 Can. Venat.		8	50 54.83	− 0.85	**− 22.54**	359 52 10.58	+ 4 14.12	− 0.1	12 50 31.42	. .	51 2 45.8	− 2.4
	22	Polaris, S. P.		7	17 9.39	+ 9.55	− 22.56	307 32 10.00	+ 3 35.64	− 1 11.2	1 16 56.38	. .	358 40 55.6	− 2.3
	23	α Virginis		5	19 24.04	− 0.78	**− 22.59**	49 22 10.08	+ 3 14.50	+ 1 4.0	13 19 0.70	. .	100 32 49.8	− 2.9
	24	Mercury C		9	24 19.68	− 0.78	− 22.56	49 48 8.70	+ 3 26.37	+ 1 5.0	13 23 56.34	+ 0.05	100 59 1.3	. .
	25	ε Bootis		9	40 14.89	− 0.81	**− 22.56**	11 16 8.60	+ 2 56.35	+ 10.9	14 39 51.52	. .	62 25 37.1	− 1.9
23, W.	26	α Hydræ		9	22 14.44	− 0.76	**− 24.29**	46 58 3.02	+ 3 33.52	+ 1 1.3	9 21 49.40	. .	98 8 59.0	− 2.1
	27	ε Leonis		9	39 36.22	− 0.64	**− 24.25**	14 30 2.50	+ 4 35.09	+ 14.9	9 39 11.30	. .	65 41 13.7	− 2.2
	28	μ Leonis		9	46 30.16	− 0.63	**− 24.30**	12 16 5.18	+ 3 53.04	+ 12.5	9 46 5.25	. .	63 26 31.9	− 2.0
	29	α Leonis		9	2 32.22	− 0.68	**− 24.26**	26 18 3.08	+ 2 43.39	+ 28.2	10 2 7.26	. .	77 27 35.9	− 2.2
	30	γ^1 Leonis		6	13 54.93	− 0.65	**− 24.28**	18 23 57.02	+ 3 20.27	+ 19.0	10 13 30.00	. .	69 33 57.5	− 1.9
	31	γ^2 Leonis		5	13 55.14	− 0.65	− 24.28	18 23 57.02	+ 3 21.66	+ 19.0	10 13 30.21	− 2.04	69 33 58.9	−15.8
28, W.	32	α Hydræ		9	22 14.62	− 1.03	**− 24.09**	46 58 2.55	+ 3 30.95	+ 1 2.5	9 21 49.53	. .	98 8 57.2	− 3.9
	33	θ Ursæ Majoris		9	25 24.61	− 0.47	− 24.05	346 38 4.15	+ 3 20.36	− 13.8	9 25 0.09	. .	37 47 31.9	− 2.1
	34	ε Leonis		9	39 36.23	− 0.77	**− 24.03**	14 30 4.90	+ 4 32.21	+ 15.1	9 39 11.41	. .	65 41 13.4	− 3.3
	35	α Bootis		9	2 32.24	− 0.86	**− 24.01**	26 15 59.48	+ 4 46.66	+ 28.7	10 2 7.32	. .	77 27 36.0	− 2.6
	36	γ^1 Leonis		9	13 54.97	− 0.80	**− 24.09**	18 23 59.30	+ 3 17.46	+ 19.3	10 13 30.11	. .	69 33 57.3	− 2.9
29	37	Sun I, N.		9	22 58.22	− 0.98	− 24.07	41 6 4.00	+ 4 9.57	+ 49.8	12 22 33.17	+64.14	92 17 24.6	. .
	38	Sun II, S.		7	25 6.51	− 0.98	− 24.07	41 38 10.08	+ 4 1.82	+ 50.8	12 24 41.46	−64.15	92 49 23.9	. .
	39	α^2 Can. Venat.		5	50 56.20	− 0.64	**− 24.13**	359 52 1.60	+ 4 25.13	− 0.1	12 50 31.49	. .	51 2 47.8	− 2.4
	40	Polaris, S. P.		6	17 36.43	−13.45	− 24.07	307 32 4.25	+ 3 45.76	− 1 13.8	1 16 58.91	. .	358 40 57.4	− 3.4
	41	α Virginis		9	19 25.81	− 1.05	**− 24.10**	49 22 1.92	+ 3 19.93	+ 1 6.3	13 19 0.69	. .	100 32 49.3	− 3.0
	42	Mercury I, N.		9	56 25.52	− 1.09	− 24.07	53 46 2.45	+ 4 41.16	+ 1 17.6	13 56 0.36	+ 0.23	104 58 22.4	. .
	43	α Bootis		9	10 43.14	− 0.80	**− 24.07**	19 2 0.15	+ 3 33.42	+ 19.6	14 10 18.27	. .	70 12 14.4	− 0.9
	44	ρ Bootis		2	27 10.68	− 0.71	**− 24.05**	7 56 0.25	+ 4 6.44	+ 8.0	14 26 45.90	. .	59 6 35.9	− 1.9
	45	ε Bootis		9	40 16.16	− 0.74	**− 24.00**	11 16 3.30	+ 3 2.16	+ 11.3	14 39 51.34	. .	62 25 38.0	− 2.3
	46	α^2 Libræ		9	44 48.62	− 1.09	**− 24.09**	54 22 2.22	+ 3 24.49	+ 1 19.0	14 44 23.45	. .	105 33 6.9	− 2.3
	47	Venus I, N.		9	19 3.08	− 1.16	− 24.08	60 48 0.15	+ 4 11.44	+ 1 41.1	15 18 37.84	+ 0.95	112 0 13.9	. .
	48	Lalande 35598		9	58 2.33	− 0.89	− 24.17	37 12 0.42	+ 1 35.59	+ 43.5	18 57 37.27	− 3.23	88 20 40.7	+18.5
	49	d Sagittarii		9	11 12.71	− 1.08	**− 24.03**	57 58 0.00	+ 3 32.33	+ 1 31.6	19 10 47.46	. .	109 9 25.1	− 4.1
	50	ρ^1 Sagittarii		9	15 18.72	− 1.07	− 24.17	56 52 3.00	+ 3 56.37	+ 1 27.9	19 14 53.48	− 3.76	108 3 48.5	+13.2

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
5	30.08	76.8	78.9
10	30.08	79.8	81.7
14	30.09	82.6	84.4
16	30.07	83.3	85.3
18	30.17	76.4	76.0
20	30.17	78.0	78.8
24	30.13	81.4	82.8
26	30.20	61.7	62.8
29	30.21	62.9	64.6
33	30.26	54.0	54.7
38	30.25	62.2	65.0
47	30.23	67.6	68.8
48	30.24	63.6	62.4

For summary of the constants of reduction see page 3.

21, 39.	One bisection.	ZENITH-POINT CORR.
22.	Three bisections.	1 to 3 + 51.21
12, 18, 47.	Four bisections.	5 to 17 + 50.74
		18 to 25 + 51.75
		26 to 31 + 55.27
		32 to 47 + 54.73
		48 to 50 + 55.24

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
13	− 5.4	+ 15 57.0	.	+ 15 51.6
14	− 5.4	− 15 57.1	.	− 16 2.5
19	− 5.5	− 15 57.0	.	− 16 2.5
20	− 5.4	+ 15 57.0	.	+ 15 51.6
24	− 6.1	. .	+ 0.4	− 5.7
37	− 5.8	+ 15 59.6	.	+ 15 53.8
38	− 5.9	− 15 59.6	.	− 16 5.5
42	− 7.3	+ 3.4	.	− 3.9
47	− 11.8	+ 13.1	.	+ 1.3

					Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
				s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
				0.88	— 24.16	35 56 2.52	+ 3 40.17	+ 41.7	19 19 36.26	. .	87 6 45.6	— 3.7
				0.78	— 24.17	23 28 2.72	+ 3 36.67	+ 25.0	19 30 7.79	— 3.14	74 38 25.6	+25.0
				0.12	— 24.17	335 40 9.32	+ 3 3.64	— 25.9	19 33 33.08	— 1.69	26 49 8.3	+32.4
				0.12	— 24.17	335 40 9.32	— 0 19.78	— 26.0	19 33 50.04	— 1.68	26 35 44.7	+32.4
				0.62	— 24.17	5 22 2.55	+ 3 44.87	+ 5.5	19 41 59.76	— 2.87	56 32 14.1	+29.8
				0.62	— 24.17	5 22 2.55	+ 3 36.57	+ 5.5	19 42 1.68	— 2.87	56 32 5.8	+29.8
				1.03	— 24.17	72 8 6.45	+ 3 33.81	+ 2 57.1	19 47 35.61	— 4.31	123 20 58.6	+10.6
				1.28	— 24.17	74 22 9.20	+ 3 30.69	+ 3 23.3	19 52 7.78	— 4.40	125 35 24.4	+10.3
				1.25	— 24.17	72 6 . .	. . .	. .	19 58 4.77	— 4.34	123 20 . .	. .
				1.02	— 24.23	51 44 2.30	+ 2 35.25	+ 1 13.0	20 11 34.37	. .	102 54 11.8	— 3.2
				0.74	— 24.17	321 30 4.75	+ 2 25.73	— 45.7	20 12 52.55	. .	12 38 6.0	— 0.9
				0.54	— 24.24	358 58 . .	. . .	. .	20 18 2.86	. .	50 7 . .	. .
				0.81	— 24.19	27 56 0.30	+ 2 25.70	+ 30.6	20 27 38.15	. .	79 5 17.8	— 3.7
				0.27	— 24.17	326 42 4.20	+ 3 42.15	— 37.8	20 30 33.81	. .	17 51 29.8	— 1.4
				. .	. .	185 54 1.68	+ 4 22.03	+ 6.0	. . . .	. .	45 7 51.5	— 1.7
				. .	. .	353 58 7.50	+ 3 28.37	— 6.0	20 37.5	. .	45 7 51.1	— 2.3
		B. M. 1880, 281, S. P.	8	50 43.47	— 2.85	— 24.17	299 38 3.70	+ 3 46.66	— 1 40.9	8 50 16.45	— 3.36	350 46 30.7	+31.3
		B. A. C. 7345	9	3 0.56	— 0.45	— 24.17	351 40 8.52	+ 2 34.60	— 8.4	21 2 35.94	— 3.49	42 48 55.9	+34.3
		τ Cygni	9	10 33.44	— 0.57	— 24.17	1 18 4.92	+ 2 24.65	+ 1.4	21 10 8.70	— 3.62	52 26 52.2	+33.5
		ζ Capricorni	9	20 25.27	— 1.12	— 24.17	61 44 2.68	+ 2 42.61	+ 1 47.3	21 19 59.98	— 4.29	112 54 53.8	+20.8
		ε Pegasi (R)	.	. . . .	. .	. .	150 24 4.58	+ 3 20.64	— 32.8	. . . .	. .	80 39 28.8	+ 2.8
		ε Pegasi	.	. . . .	. .	. .	29 30 7.68	+ 2 22.02	+ 32.8	21 38.5	. .	80 39 23.7	— 2.3
		Groom. 3756	9	17 24.99	+ 0.58	— 24.17	322 56 0.98	+ 4 5.08	— 43.6	22 17 1.40	— 6.27	14 5 43.7	+32.4
		π Aquarii	3	19 44.37	— 0.90	— 24.24	38 2 9.15	+ 3 27.41	+ 45.4	22 19 19.30	. .	89 12 43.2	— 3.4
		9 Draconis, S. P.	9	25 27.53	— 2.14	— 24.17	295 12 6.42	+ 2 18.52	— 2 2.3	10 25 1.22	. .	346 18 43.8	— 0.2
		ζ Pegasi	9	36 3.86	— 0.82	— 24.20	28 36 4.80	+ 3 33.04	+ 31.7	22 35 38.86	. .	79 46 30.7	— 2.4
		λ Aquarii	9	46 56.89	— 0.98	— 24.13	47 2 . .	. . .	. .	22 46 31.73	. .	98 12 . .	. .
		74 Aquarii	8	47 45.44	— 1.01	— 24.18	51 2 8.25	+ 4 27.46	+ 1 11.8	22 47 20.25	— 4.29	102 14 8.7	+27.0
		Weisse 1047	9	52 24.88	— 1.01	— 24.18	50 34 4.18	+ 3 39.99	+ 1 10.6	22 51 59.69	— 4.29	101 45 16.0	+27.2
		Weisse 1079	9	53 52.24	— 1.03	— 24.18	52 30 7.12	+ 3 59.27	+ 1 15.7	22 53 27.03	— 4.31	103 41 43.3	+26.9
	31	Weisse 1204	9	58 48.20	— 1.02	— 24.18	51 38 5.50	+ 2 43.08	+ 1 13.3	22 58 23.00	— 4.30	102 48 23.1	+27.2
	32	Weisse 1261	9	1 43.08	— 1.01	— 24.18	51 14 4.68	+ 4 31.89	+ 1 12.4	23 1 17.89	— 4.31	102 26 10.2	+27.3
	33	Weisse 49	9	5 49.13	— 1.00	— 24.18	49 58 6.15	+ 2 49.96	+ 1 9.1	23 5 23.95	— 4.30	101 8 26.4	+27.5
	34	ψ Aquarii	9	10 12.02	— 0.99	— 24.18	48 32 6.10	+ 3 47.44	+ 1 5.8	23 9 46.85	— 4.30	99 43 20.5	+27.8
	35	Weisse 265	9	15 13.71	— 1.00	— 24.18	49 58 5.95	+ 4 35.84	+ 1 9.3	23 14 48.53	— 4.31	101 10 12.3	+27.6
	36	Weisse 377	9	20 58.38	— 1.00	— 24.18	49 30 7.22	+ 2 53.49	+ 1 8.1	23 20 33.20	— 4.31	100 40 30.0	+27.8
	37	Weisse 497	9	26 48.44	— 1.00	— 24.18	50 28 5.55	+ 2 54.03	+ 1 10.5	23 26 23.26	— 4.32	101 28 31.3	+27.7
	38	Weisse 586	9	30 24.27	— 0.98	— 24.18	48 14 6.12	+ 3 1.68	+ 1 5.2	23 29 59.11	— 4.31	99 24 34.2	+28.0
	39	ι Piscium	9	34 22.30	— 0.86	— 24.19	33 50 10.22	+ 3 5.51	+ 39.1	23 33 57.26	. .	85 0 16.0	— 2.5
	40	Groom. 4163	9	49 38.98	+ 0.38	— 24.18	325 6 5.28	+ 2 33.61	— 40.6	23 49 15.18	. .	16 14 19.5	— 1.3
	41	ω Piscium	9	53 44.52	— 0.85	— 24.12	32 36 5.82	+ 3 48.62	+ 37.4	23 53 19.49	. .	83 46 53.0	— 2.2
October 2, S.	42	ε Leonis	9	39 36.31	— 0.76	— 24.03	14 30 13.68	+ 4 26.04	+ 15.0	9 39 11.52	. .	65 41 15.9	— 1.4
	43	α Leonis	9	2 32.31	— 0.80	— 24.05	26 18 6.95	+ 2 40.10	+ 28.4	10 2 7.47	. .	77 27 36.6	— 2.4
	44	γ^1 Leonis	9	13 54.96	— 0.77	— 24.03	18 24 5.78	+ 3 13.03	+ 19.1	10 13 30.14	. .	69 33 59.1	— 1.7
3	45	Sun I, S.	9	37 27.68	— 0.88	— 24.12	43 12 7.28	+ 3 12.46	+ 53.0	12 37 2.68	+64.43	94 22 33.9	. .
	46	Sun II, N.	9	39 36.54	— 0.88	— 24.12	42 40 7.38	+ 3 12.73	+ 52.0	12 39 11.54	—64.43	93 50 33.3	. .
	47	Polaris, S. P.	3	17 31.83	— 4.18	— 24.15	307 30 . .	. . .	. .	1 17 3.50	. .	358 41 . .	. .
	48	η Bootis	9	49 30.42	— 0.78	— 24.11	19 50 7.52	+ 3 53.67	+ 20.4	13 49 5.48	. .	71 0 42.8	— 1.0
	49	α Bootis	9	10 43.17	— 0.78	— 24.15	19 2 8.40	+ 3 26.16	+ 19.5	14 10 18.22	. .	70 12 15.3	— 0.7
	50	β Bootis	9	57 55.80	— 0.69	— 24.30	357 58 2.90	+ 4 11.29	— 1.9	14 57 30.91	. .	49 8 33.5	— 1.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
17	30.25	60.2	58.3	ZENITH-POINT CORR.	45	— 6.1	— 16 0.2	. .	— 16 6.3
27	30.24	58.2	56.3	″	46	— 6.0	+ 16 0.3	. .	+ 15 54.3
40	30.24	56.3	54.2						
42	30.26	59.6	60.8	3, 4. One bisection. 1 to 41 + 55.24					
46	30.25	67.2	70.7	42 to 50 + 54.42					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
October 3, S.	1	β Libræ		9	11 6.94	− 0.90	**− 24.26**	47 46 5.25	+ 3 21.85	+ 1 1.9	15 10 41.83	. .	98 56 50.2	− 1.5
	2	α Cor. Bor.		9	30 7.86	− 0.75	**− 24.14**	11 42 4.65	+ 4 31.42	+ 11.7	15 29 42.89	. .	62 53 9.0	− 1.6
	3	Venus I, N.		9	34 32.94	− 0.98	− 24.22	62 2 5.52	+ 3 36.06	+ 1 45.6	15 34 7.74	+ 1.00	113 13 48.4	. .
	4	Lalande 35150		9	47 5.29	− 0.78	− 24.36	25 0 5.58	+ 3 11.72	+ 26.6	18 46 40.15	− 2.84	76 10 5.1	+21.5
	5	Lalande 35560		9	57 20.64	− 0.84	− 24.36	37 12 6.45	+ 4 19.04	+ 43.2	18 56 55.44	− 3.17	88 23 29.9	+18.6
	6	ζ Aquilæ		9	0 27.22	− 0.78	**− 24.31**	25 8 4.98	+ 3 22.14	+ 26.7	19 0 2.08	. .	76 18 15.0	− 2.2
	7	d Sagittarii		9	11 12.84	− 0.94	**− 24.38**	57 58 3.88	+ 3 30.97	+ 1 30.9	19 10 47.54	. .	109 9 26.9	− 2.3
	8	ρ² Sagittarii		9	15 26.87	− 0.94	− 24.36	57 20 7.88	+ 3 19.89	+ 1 28.7	19 15 1.57	− 3.71	108 31 17.7	+13.1
	9	Weisse 728		9	30 32.81	− 0.78	− 24.36	23 28 3.90	+ 3 35.75	+ 24.8	19 30 7.67	− 3.08	74 38 25.6	+25.2
	10	B. A. C. 6728		9	33 14.69	− 0.66	− 24.36	355 24 4.50	+ 2 33.16	− 4.5	19 32 49.67	− 2.43	46 32 54.4	+31.3
	11	λ Ursæ Minoris		4	41 49.05	+ 4.58	− 24.36	309 54 4.12	+ 3 15.29	− 1 7.9	19 41 29.27	. .	1 2 32.7	− 1.3
	12	B. A. C. 6830		9	49 6.06	− 0.64	− 24.36	351 12 9.05	+ 3 25.60	− 8.8	19 48 41.06	− 2.48	42 21 47.0	+32.7
	13	Weisse (2) 1739		9	54 25.21	− 0.72	− 24.35	8 10 8.75	+ 2 57.61	+ 8.2	19 54 0.14	− 2.96	59 19 35.8	+30.4
	14	B. A. C. 6886		9	58 30.13	− 1.04	− 24.35	72 6 6.02	+ 4 21.30	+ 2 55.4	19 58 4.74	− 4.28	123 19 43.9	+11.4
	15	B. A. C. 6922		9	3 56.52	− 1.07	− 24.35	75 10 5.95	+ 3 35.14	+ 3 32.8	20 3 31.10	− 4.40	126 23 35.1	+10.8
	16	α² Capricorni		9	11 59.51	− 0.90	**− 24.36**	51 44 4.90	+ 2 33.72	+ 12.4	20 11 34.26	. .	102 54 12.2	− 2.9
	17	ε Cygni (R)		.	. . . .	. .	. .	174 34 7.05	+ 4 37.33	− 5.4	. . . .	. .	56 27 42.2	+33.0
	18	ε Cygni		.	. . . .	. .	. .	5 18 7.92	+ 3 5.82	+ 5.4	20 41.5	. .	56 27 40.3	+33.0
	19	Cygni		9	53 14.86	− 0.67	**− 24.37**	358 8 9.28	+ 2 7.71	− 1.8	20 52 49.84	. .	49 16 36.4	− 1.3
	20	ζ Cygni		9	8 23.53	− 0.72	**− 24.38**	9 6 5.05	+ 2 12.19	+ 9.2	21 7 58.46	. .	60 14 47.6	− 3.1
	21	α Cephei (R)		.	. . . .	. .	. .	203 8 6.88	+ 3 34.67	+ 24.6	. . . .	. .	27 54 15.0	− 0.2
	22	α Cephei		.	. . . .	. .	. .	336 46 6.12	+ 2 9.28	− 24.6	21 15.8	. .	27 54 12.0	− 3.2
	23	d Ursæ Maj., S. P.		9	24 29.22	− 0.92	− 24.35	289 14 3.25	+ 2 39.85	− 2 42.4	9 24 3.95	. .	340 20 21.9	+ 0.2
	24	11 Cephei		9	40 40.57	− 0.44	− 24.35	328 4 3.45	+ 3 27.98	− 35.7	21 40 15.78	. .	19 13 16.9	− 2.1
	25	μ Capricorni		9	47 21.20	− 0.91	**− 24.39**	52 56 4.55	+ 2 14.37	+ 1 16.0	21 46 55.94	. .	104 5 56.1	− 3.2
	26	α Gruis		9	1 17.93	− 1.20	− 24.34	86 10 10.92	+ 3 8.26	+12 2.6	22 0 52.39	. .	137 31 43.0	+ 5.8
	27	ζ Pegasi		9	36 3.94	− 0.80	**− 24.32**	28 36 4.68	+ 3 32.81	+ 31.4	22 35 38.80	. .	79 46 30.1	− 2.7
	28	Weisse 966		9	48 23.08	− 0.90	− 24.34	51 38 8.18	+ 2 47.79	+ 1 12.7	22 47 57.84	− 4.29	102 48 29.9	+26.8
	29	Weisse 1047		9	52 24.86	− 0.90	− 24.34	50 34 3.58	+ 3 39.96	+ 1 10.1	22 51 59.62	− 4.29	101 45 14.8	+27.1
	30	Weisse 1156		9	56 50.88	− 0.90	− 24.34	50 42 10.10	+ 3 46.97	+ 1 10.5	22 56 25.64	− 4.29	101 53 28.8	+27.2
	31	Weisse 49		9	5 49.14	− 0.90	− 24.34	49 58 10.55	+ 2 43.34	+ 1 8.6	23 5 23.90	− 4.30	101 8 23.7	+27.4
	32	Weisse 123		9	9 0.62	− 0.90	− 24.34	50 8 6.42	+ 3 41.44	+ 1 9.1	23 8 35.38	− 4.30	101 19 18.2	+27.5
	33	Weisse 228		9	13 22.19	− 0.90	− 24.34	51 38 8.08	+ 2 42.32	+ 1 12.8	23 12 56.95	− 4.31	102 48 24.4	+27.3
	34	Weisse 309		9	17 22.81	− 0.90	− 24.34	50 14 4.50	+ 3 6.11	+ 1 9.3	23 16 57.57	− 4.31	101 24 41.1	+27.5
	35	Weisse 377		9	20 58.43	− 0.89	− 24.34	49 30 8.18	+ 2 51.31	+ 1 7.6	23 20 33.20	− 4.32	100 40 28.3	+27.7
	36	Weisse 497		9	26 48.50	− 0.90	− 24.34	50 28 6.10	+ 2 52.57	+ 1 9.9	23 26 23.26	− 4.32	101 38 29.8	+27.6
	37	Weisse 586		9	30 24.34	− 0.89	− 24.34	48 14 9.85	+ 2 57.24	+ 1 4.7	23 29 59.11	− 4.32	99 24 33.0	+27.9
	38	Weisse 629		9	32 36.36	− 0.89	− 24.34	48 6 8.95	+ 2 43.92	+ 1 4.4	23 32 11.13	− 4.32	99 16 18.5	+27.9
	39	106 Aquarii		9	38 34.43	− 0.94	− 24.34	57 44 5.42	+ 3 26.67	+ 1 31.4	23 38 9.15	− 4.34	108 55 24.7	+26.7
	40	δ Sculptoris		9	43 16.39	− 1.00	− 24.34	67 34 8.12	+ 3 41.40	+ 2 19.3	23 42 51.05	− 4.39	118 46 30.0	+25.4
	41	ω Piscium		9	53 44.66	− 0.82	**− 24.28**	32 36 4.68	+ 3 50.11	+ 37.0	23 53 19.51	. .	83 46 53.0	− 2.0
4, W.	42	Lalande 35560		2	57 20.78	− 0.94	− 24.56	37 12 5.42	+ 4 20.00	+ 43.3	18 56 55.43	− 3.16	88 23 29.9	+18.6
	43	Lalande 35598	5.5	5	58 2.66	− 0.94	− 24.56	37 12 5.42	+ 1 31.83	+ 43.2	18 57 37.16	− 3.16	88 20 41.6	+18.6
	44	d Sagittarii		9	11 13.20	− 1.06	**− 24.63**	57 58 4.25	+ 3 30.55	+ 1 31.0	19 10 47.58	. .	109 9 27.0	− 2.3
	45	Piazzi VII, 67, S.P.		3	19 6.97	− 1.08	− 24.56	287 36 3.10	+ 2 18.81	− 2 57.2	7 18 41.33	. .	338 41 45.9	− 3.7
	46	δ Aquilæ		9	20 1.69	− 0.94	**− 24.56**	35 56 5.50	+ 3 38.18	+ 41.4	19 19 36.19	. .	87 6 46.3	− 3.0
	47	Lalande 37079, 0	7	9	30 26.13	− 1.06	− 24.57	57 48 6.65	+ 6 23.28	+ 1 30.7	19 30 0.50	− 3.78	109 2 21.8	+14.1
	48	Anonymous	7	4	30 50.84	− 1.06	− 24.57	57 48 6.65	+ 3 32.05	+ 1 30.5	19 30 24.91	− 3.78	108 59 30.4	+14.2
	49	B. A. C. 6720		.	. . . .	. .	. .	355 8 5.50	+ 3 53.01	− 4.8	19 31.1	. .	46 18 14.9	+31.3
	50	λ Ursæ Minoris		4	41 42.50	+ 6.01	− 24.57	309 54 1.42	+ 3 17.83	− 1 8.0	19 41 23.94	. .	1 2 32.4	− 1.5

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
3	30.23	72.8	72.5			3	− 12.5	+ 13.7	.	+ 1.2
8	30.22	67.2	65.5		ZENITH-POINT CORR.					
18	30.23	65.0	63.2		″					
26	30.23	62.8	60.4	16, 48, 49. One bisection.	1 to 3 + 54.42					
41	30.24	60.8	58.3	11, 26. Three bisections.	4 to 41 + 54.43					
43	30.27	66.7	66.3	3, 7. Four bisections.	42 to 50 + 54.54					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
October 4, W.	1	17¹ Cygni		6	42 24.98	− 0.80	− 24.57	5 22 5.02	+ 3 41.30	+ 5.4	19 41 59.61	− 2.77	56 32 12.9	+30.3
	2	17² Cygni		5	42 27.03	− 0.80	− 24.57	5 22 5.02	+ 3 33.18	+ 5.4	19 42 1.66	− 2.77	56 32 4.8	+30.3
	3	B. A. C. 6867		9	54 7.74	− 0.63	− 24.57	340 18 7.22	+ 3 24.72	− 20.4	19 53 42.54	− 2.10	31 27 32.7	+33.9
	4	3 Ursæ Maj., S. P.		5	1 33.59	− 1.08	− 24.57	287 42 7.35	+ 3 8.41	− 2 56.6	8 1 7.94	. .	338 48 40.4	− 0.7
	5	31 Cygni		6	10 23.03	− 0.73	− 24.57	352 28 6.78	+ 2 1.40	− 7.5	20 9 57.73	− 2.75	43 36 21.9	+33.7
	6	Piazzi 63		5	10 24.21	− 0.73	− 24.57	352 28 6.78	+ 3 48.64	− 7.5	20 9 58.91	− 2.75	43 38 9.1	+33.7
	7	α² Capricorni		3	11 59.78	− 1.02	**− 24.53**	51 44 7.60	+ 2 30.07	+ 1 12.5	20 11 34.19	. .	102 54 11.4	− 3.7
	8	ε Delphini		9	28 3.50	− 0.90	**− 24.55**	27 56 5.32	+ 2 21.11	+ 30.4	20 27 38.03	. .	79 5 18.0	− 3.4
	9	α Cygni (R)		.	. . . .	. .	. .	185 54 4.90	+ 4 18.96	+ 6.0	. . . .	. .	45 7 51.3	− 1.3
	10	α Cygni		.	. . . .	. .	. .	353 58 9.85	+ 3 25.24	− 6.0	20 37.5	. .	45 7 50.3	− 2.3
	11	B. A. C. 7256 (R)		.	. . . .	. .	. .	168 40 12.78	+ 3 25.48	− 11.4	. . . .	. .	62 22 54.3	+32.3
	12	B. A. C. 7256		.	. . . .	. .	. .	11 12 8.65	+ 4 10.54	+ 11.4	20 49.6	. .	62 22 51.8	+32.3
	13	τ Cygni		9	10 33.80	− 0.78	− 24.58	1 18 7.30	+ 2 20.88	+ 1.3	21 10 8.44	− 3.54	52 26 50.7	+34.4
	14	ζ Capricorni		9	20 25.62	− 1.08	− 24.58	61 44 6.38	+ 2 39.77	+ 1 46.7	21 19 59.96	− 4.24	112 54 54.1	+20.6
	15	θ Aquarii		9	11 6.14	− 1.00	**− 24.57**	47 12 7.78	+ 2 12.26	+ 1 2.3	22 10 40.55	. .	98 21 43.5	− 3.1
	16	Groom. 3756		9	17 25.32	− 0.32	− 24.59	322 56 3.10	+ 4 0.18	− 43.4	22 17 0.41	− 6.04	14 5 41.1	+34.1
	17	π Aquarii		3	19 44.81	− 0.95	**− 24.67**	38 2 8.88	+ 3 28.57	+ 45.2	22 19 19.27	. .	89 12 43.8	− 2.8
	18	η Aquarii		9	29 47.30	− 0.95	**− 24.61**	39 32 7.60	+ 3 43.47	+ 47.7	22 29 21.75	. .	90 43 0.0	− 2.5
	19	ζ Pegasi		9	36 4.28	− 0.90	**− 24.56**	28 36 7.05	+ 3 29.81	+ 31.5	22 35 38.78	. .	79 46 29.6	− 3.1
	20	74 Aquarii		9	47 45.77	− 1.02	− 24.60	51 2 8.90	+ 4 25.64	+ 1 11.4	22 47 20.15	− 4.28	102 14 7.1	+26.9
	21	Weisse 1047		9	52 25.23	− 1.01	− 24.60	50 34 5.88	+ 3 37.90	+ 1 10.6	22 51 59.62	− 4.29	101 45 15.6	+27.1
	22	Weisse 1079		9	53 52.64	− 1.03	− 24.60	52 30 12.42	+ 3 52.63	+ 1 15.3	22 53 27.01	− 4.30	103 41 41.5	+26.8
	23	Weisse 1204		9	58 48.63	− 1.02	− 24.60	51 38 8.80	+ 2 40.26	+ 1 13.0	22 58 23.01	− 4.30	102 48 23.3	+27.0
	24	Weisse 1261		9	1 43.54	− 1.02	− 24.60	51 14 6.32	+ 4 30.44	+ 1 12.0	23 1 17.92	− 4.30	102 26 10.0	+27.1
	25	Weisse 49		9	5 49.54	− 1.01	− 24.60	49 58 5.30	+ 2 49.96	+ 1 8.8	23 5 23.93	− 4.30	101 8 25.3	+27.4
	26	ψ Aquarii		9	10 12.43	− 1.00	− 24.60	48 32 9.15	+ 3 43.54	+ 1 5.5	23 9 46.83	− 4.30	99 43 19.4	+27.7
	27	Weisse 265		9	15 14.12	− 1.01	− 24.60	49 58 7.12	+ 4 34.56	+ 1 8.9	23 14 48.51	− 4.31	101 10 11.8	+27.5
	28	Weisse 377		9	20 58.86	− 1.01	− 24.60	49 30 8.82	+ 2 51.37	+ 1 7.7	23 20 33.25	− 4.32	100 40 29.1	+27.7
	29	Weisse 497		9	26 48.86	− 1.01	− 24.60	50 28 6.98	+ 2 52.25	+ 1 10.1	23 26 23.25	− 4.32	101 38 30.5	+27.6
	30	Weisse 586		9	30 24.73	− 1.00	− 24.61	48 14 5.60	+ 3 2.24	+ 1 4.8	23 29 59.12	− 4.32	99 24 33.8	+27.9
	31	ι Piscium		9	34 22.74	− 0.93	**− 24.57**	33 50 10.12	+ 3 4.43	+ 38.8	23 33 57.20	. .	85 0 14.6	− 3.8
5, E.	32	Weisse (2) 1528		9	51 22.20	− 0.92	− 24.80	20 52 7.80	+ 3 12.52	+ 21.7	18 50 56.48	− 2.73	72 2 3.2	+22.9
	33	B. A. C. 6522		5	58 50.32	− 0.72	− 24.80	343 20 . .	. . .	. .	18 58 24.80	− 1.39	34 31 . .	. .
	34	ζ Aquilæ		9	0 27.79	− 0.93	**− 24.77**	25 8 15.58	+ 3 10.19	+ 26.7	19 0 2.06	. .	76 18 13.7	− 3.5
	35	d Sagittarii		9	11 13.37	− 1.10	**− 24.78**	57 58 4.50	+ 3 28.61	+ 1 30.8	19 10 47.47	. .	109 9 25.1	− 4.2
	36	Lal. (F) 3268		9	30 30.12	+ 0.09	− 24.80	315 36 6.98	+ 4 3.15	− 55.5	19 30 5.41	+ 4.82	6 45 35.8	+32.1
	37	Anonymous		9	36 52.06	− 1.02	− 24.80	44 4 4.10	+ 3 15.51	+ 55.2	19 36 26.24	− 3.50	95 14 36.0	+19.3
	38	λ Ursæ Minoris		4	41 42.05	+ 5.26	− 24.80	309 54 . .	. . .	. .	19 41 22.51	. .	1 3 . .	. .
	39	B. A. C. 6816		9	48 1.54	− 1.22	− 24.80	72 8 8.35	+ 3 34.53	+ 2 55.5	19 47 35.52	− 4.21	123 20 59.6	+10.5
	40	B. A. C. 6843		9	52 33.54	− 1.24	− 24.80	74 22 9.35	+ 3 34.38	+ 3 21.6	19 52 7.50	− 4.30	125 35 26.5	+10.1
	41	Anonymous	12.0	7	58 14.41	− 1.06	− 24.80	51 38 6.72	+ 2 22.70	+ 1 12.0	19 57 48.55	− 3.75	102 48 2.6	+18.3
	42	α² Capricorni		9	12 0.10	− 1.06	**− 24.82**	51 44 3.75	+ 2 34.21	+ 1 12.3	20 11 34.24	. .	102 54 11.5	− 3.7
	43	π Capricorni		9	21 3.87	− 1.10	**− 24.83**	57 24 8.80	+ 3 30.80	+ 1 29.2	20 20 37.97	. .	108 35 30.0	− 3.2
	44	ε Delphini		9	28 3.77	− 0.95	**− 24.78**	27 56 5.75	+ 2 21.34	+ 30.4	20 27 38.02	. .	79 5 18.7	− 2.6
	45	α Cygni (R)		.	. . . .	. .	. .	185 54 4.52	+ 4 19.62	+ 6.0	. . . .	. .	45 7 51.1	− 1.4
	46	α Cygni		.	. . . .	. .	. .	353 58 6.85	+ 3 29.04	− 6.0	20 37.5	. .	45 7 51.1	− 1.4
	47	B. A. C 7256 (R)		.	. . . .	. .	. .	168 40 13.05	+ 3 26.14	− 11.4	. . . .	. .	62 22 53.4	+32.4
	48	B. A. C. 7256		.	. . . .	. .	. .	11 12 3.78	+ 4 13.18	+ 11.4	20 49.6	. .	62 22 49.6	+32.4
	49	λ Aquarii		9	46 57.59	− 1.04	**− 24.80**	47 2 7.35	+ 2 24.67	+ 1 1.8	22 46 31.75	. .	98 11 55.0	− 3.1
	50	α Piscis Australis		9	51 38.13	− 1.19	**− 24.80**	69 2 10.35	+ 3 25.24	+ 2 29.4	22 51 12.14	. .	120 14 26.2	− 1.1

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
13	30.28	63.0	61.4	ZENITH-POINT CORR.					
17	30.28	61.3	59.7	″					
31	30.28	59.4	58.3						
32	30.29	68.8	67.5	3, 6, 7. One bisection. 1 to 31 + 54.54					
41	30.29	67.5	65.5	32 to 50 + 54.43					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
October 5, E.	1	α Pegasi		9	59 23.02	− 0.93	**− 24.79**	24 16 6.90	+ 2 17.46	+ 26.0	22 58 57.29	. .	75 25 11.6	− 3.2
6, W.	2	51 Cephei, S. P.		5	45 45.86	− 3.56	− 25.37	306 4 3.68	+ 4 0.90	− 1 17.4	6 45 16.93	. .	357 13 8.4	− 1.6
	3	β Lyræ		9	46 11.89	− 0.84	**− 25.39**	5 36 7.42	+ 3 22.51	+ 5.6	18 45 45.68	. .	56 45 56.7	− 2.5
	4	Weisse (2) 1528		9	51 22.78	− 0.92	− 25.37	20 52 4.70	+ 3 15.76	+ 21.7	18 50 56.49	− 2.71	72 2 3.4	+22.9
	5	B. A. C. 6511		9	58 57.16	− 1.29	− 25.37	76 0 4.68	+ 3 35.69	+ 3 44.2	18 58 30.50	− 4.12	127 13 45.8	+ 5.1
	6	d Sagittarii		9	11 13.96	− 1.13	**− 25.36**	57 58 3.00	+ 3 31.99	+ 1 30.7	19 10 47.45	. .	109 9 26.9	− 2.4
	7	τ Draconis		9	18 14.51	− 0.42	− 25.38	325 42 4.05	+ 3 30.65	− 38.6	19 17 48.71	. .	16 51 17.3	− 1.1
	8	Lal. (F) 3268		5	30 30.70	+ 0.28	− 25.38	315 36 4.20	+ 4 6.00	− 55.5	19 30 5.60	+ 5.04	6 45 35.9	+32.1
	9	B. A. C. 6723		9	31 44.71	− 0.73	− 25.38	347 52 6.15	+ 2 8.78	− 12.2	19 31 18.60	− 2.04	39 0 23.9	+32.2
	10	Σ (P. M.) 2355¹		6	41 33.38	− 0.84	− 25.38	5 30 7.80	+ 3 3.26	+ 5.5	19 41 7.16	− 2.72	56 39 37.8	+30.3
	11	Σ (P. M.) 2355²		5	41 33.59	− 0.84	− 25.38	5 30 7.80	+ 3 5.90	+ 5.5	19 41 7.37	− 2.72	56 39 40.4	+30.3
	12	O. Arg. S. 20008		9	44 55.80	− 1.19	− 25.38	66 10 6.98	+ 3 57.07	+ 2 8.4	19 44 29.23	− 4.01	117 22 33.6	+12.2
	13	B. A. C. 6816		9	48 2.04	− 1.25	− 25.38	72 8 7.15	+ 3 36.02	+ 2 55.2	19 47 35.41	− 4.20	123 20 59.6	+10.4
	14	B. A. C. 6867		9	54 8.48	− 0.66	− 25.38	340 18 7.68	+ 3 24.11	− 20.3	19 53 42.44	− 2.02	31 27 32.7	+34.1
	15	Anonymous	12		. . . .	. .	. .	51 38 10.78	+ 2 23.40	+ 1 11.9	19 57.8	. .	102 48 7.3	+18.3
	16	31 Cygni		9	10 23.98	− 0.76	− 25.39	352 28 . .	. . . .	. . . .	20 9 57.83	− 2.70	43 36 . .	. .
	17	α² Capricorni		3	12 0.61	− 1.08	**− 25.33**	51 44 4.92	+ 2 33.51	+ 1 12.3	20 11 34.14	. .	102 54 11.9	− 3.3
	18	π Capricorni		9	21 4.46	− 1.12	**− 25.42**	57 24 4.70	+ 3 34.90	+ 1 29.2	20 20 37.95	. .	108 35 30.0	− 3.2
	19	ε Delphini		9	28 4.38	− 0.95	**− 25.41**	27 56 1.42	+ 2 25.29	+ 30.3	20 27 38.04	. .	79 5 18.2	− 3.1
	20	α Cygni (R)			. . . .	. .	. .	185 54 1.85	+ 4 22.85	+ 6.0	. . . .	. .	45 7 50.5	− 1.9
	21	α Cygni			. . . .	. .	. .	353 58 2.82	+ 3 31.85	− 6.0	20 37.5	. .	45 7 49.9	− 2.5
	22	B. A. C. 7256 (R)			. . . .	. .	. .	168 40 13.80	+ 3 25.16	− 11.4	. . . .	. .	62 22 53.6	+32.5
	23	B. A. C. 7256			. . . .	. .	. .	11 12 7.70	+ 4 10.13	+ 11.4	20 49.6	. .	62 22 50.4	+32.5
7, S.	24	1 Aquilæ		9	29 17.08	− 0.98	**− 25.78**	47 8 5.72	+ 3 49.72	+ 1 0.9	18 28 50.30	. .	98 19 17.5	− 1.4
	25	α Lyræ		9	33 25.10	− 0.76	**− 25.81**	0 10 7.78	+ 2 35.34	+ 0.2	18 32 58.54	. .	51 19 4.5	− 1.3
	26	51 Cephei, S. P.		4	45 46.28	− 3.06	− 25.81	306 4 5.28	+ 3 59.94	− 1 17.2	6 45 17.41	. .	357 13 9.2	− 0.8
	27	Lalande 35150		9	47 6.72	− 0.87	− 25.81	25 0 3.58	+ 3 14.41	+ 26.4	18 46 40.04	− 2.77	76 10 5.6	+21.3
	28	B. A. C. 6511		9	58 57.44	− 1.18	− 25.81	76 0 7.65	+ 3 35.33	+ 3 43.6	18 58 30.45	− 4.09	127 13 47.8	+ 5.0
	29	d Sagittarii		9	11 14.36	− 1.04	**− 25.87**	57 58 4.48	+ 3 31.33	+ 1 30.4	19 10 47.51	. .	109 9 27.4	− 1.9
	30	δ Aquilæ		9	20 2.82	− 0.92	**− 25.77**	35 56 5.75	+ 3 39.45	+ 41.1	19 19 36.08	. .	87 6 47.5	− 1.8
	31	Lal. (F) 3268		7	30 30.87	+ 0.16	− 25.82	315 36 6.25	+ 4 4.22	− 55.3	19 30 5.21	+ 5.25	6 45 36.4	+32.2
	32	Groom. 2884		9	32 36.48	− 0.75	− 25.82	358 8 6.38	+ 2 45.65	− 1.8	19 32 9.91	− 2.40	49 17 11.4	+31.0
	33	Σ (P. M.) 2355¹		6	41 33.73	− 0.79	− 25.82	5 30 6.82	+ 3 5.43	+ 5.5	19 41 7.12	− 2.70	56 39 38.9	+30.3
	34	Σ (P. M.) 2355²		5	41 34.05	− 0.79	− 25.82	5 30 6.82	+ 3 7.07	+ 5.5	19 41 7.44	− 2.70	56 39 40.6	+30.3
	35	χ Cygni		9	46 31.26	− 0.79	− 25.83	6 12 7.88	+ 3 53.77	+ 6.2	19 46 4.64	− 2.76	57 22 29.0	+30.4
	36	B. A. C 6867		7	54 8.74	− 0.63	− 25.83	340 18 7.55	+ 3 22.13	− 20.2	19 53 42.28	− 1.98	31 27 30.7	+34.2
	37	B. A. C. 6922		9	3 57.96	− 1.18	− 25.83	75 10 7.95	+ 3 35.65	+ 3 31.6	20 3 30.95	− 4.33	126 23 36.4	+10.5
	38	B. A. C. 7029 (R)			. . . .	. .	. .	172 52 5.50	+ 3 29.81	− 7.1	. . . .	. .	58 10 53.0	+32.1
	39	B. A. C. 7029			. . . .	. .	. .	7 2 9.12	+ 2 12.34	+ 7.1	20 19.2	. .	58 10 49.8	+32.1
	40	α Cygni (R)			. . . .	. .	. .	185 54 5.58	+ 4 18.81	+ 6.0	. . . .	. .	45 7 50.8	− 1.5
	41	α Cygni			. . . .	. .	. .	353 58 6.48	+ 3 27.33	− 6.0	20 37.5	. .	45 7 49.0	− 3.3
	42	α Gruis		9	1 19.52	− 1.31	− 25.87	86 10 8.72	+ 3 16.29	+11 59.6	22 0 52.34	. .	137 31 45.8	+ 7.9
	43	θ Aquarii		9	11 7.40	− 0.98	**− 25.88**	47 12 8.55	+ 2 12.46	+ 1 1.9	22 10 40.55	. .	98 21 44.1	− 2.6
	44	π Aquarii		9	19 45.91	− 0.93	**− 25.82**	38 2 7.90	+ 3 29.70	+ 44.9	22 19 19.10	. .	89 12 43.7	− 2.9
	45	η Aquarii		9	29 48.57	− 0.94	**− 25.92**	39 32 9.92	+ 3 41.34	+ 47.4	22 29 21.75	. .	90 42 59.9	− 2.6
	46	Weisse 966		9	48 24.84	− 1.00	− 25.89	51 38 7.88	+ 2 49.67	+ 1 12.5	22 47 57.95	− 4.27	102 48 31.3	+26.6
	47	Weisse 1047		9	52 26.46	− 0.99	− 25.89	50 34 6.65	+ 3 38.49	+ 1 9.8	22 51 59.58	− 4.27	101 45 16.1	+26.9
	48	Weisse 1156		9	56 52.45	− 0.99	− 25.89	50 42 8.00	+ 3 50.31	+ 1 10.2	22 56 25.57	− 4.28	101 53 29.7	+27.0
	49	Weisse 1232		9	0 14.72	− 0.99	− 25.89	49 52 10.60	+ 4 17.55	+ 1 8.2	22 59 47.84	− 4.28	101 3 57.6	+27.2
	50	Weisse 49		9	5 50.76	− 0.99	− 25.89	49 58 7.85	+ 2 46.75	+ 1 8.3	23 5 23.88	− 4.29	101 8 24.1	+27.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
1	30.31	63.0	61.2	ZENITH-POINT CORR.					
2	30.30	70.2	69.2	″					
23	30.29	65.9	64.1	8, 39. One bisection. 1 + 54.43					
25	30.16	69.0	68.4	42. Four bisections. 2 to 23 + 53.83					
38	30.15	66.5	65.0	24 to 50 + 55.32					
42	30.15	63.2	61.2						

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
October					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
7, S.	1	Weisse 123		9	8 2.33	− 0.99	− 25.89	50 8 7.40	+ 3 41.36	+ 1 8.8	23 7 35.45	− 4.30	101 19 18.8	+27.3
	2	Weisse 185		9	12 1.60	− 1.00	− 25.89	51 10 7.15	+ 3 17.37	+ 1 11.4	23 11 34.71	− 4.30	102 20 57.1	+27.1
	3	Weisse 265		9	15 15.44	− 0.99	− 25.90	49 58 11.48	+ 4 31.13	+ 1 8.5	23 14 48.55	− 4.30	101 10 12.3	+27.4
	4	Weisse 377		9	20 0.13	− 0.99	− 25.90	49 30 9.20	+ 2 51.22	+ 1 7.3	23 19 33.24	− 4.31	100 40 28.9	+27.5
	5	Weisse 427		9	23 25.57	− 0.98	− 25.90	48 44 4.48	+ 2 53.38	+ 1 5.5	23 22 58.69	− 4.31	99 54 24.6	+27.6
	6	Weisse 497		9	26 50.19	− 0.99	− 25.90	50 28 8.52	+ 2 52.15	+ 1 9.6	23 26 23.30	− 4.32	101 38 31.5	+27.4
	7	Weisse 571		9	29 52.47	− 0.99	− 25.90	50 0 12.62	+ 4 13.91	+ 1 8.6	23 29 25.58	− 4.32	101 11 56.3	+27.5
	8	Weisse 629		9	32 37.99	− 0.98	− 25.90	48 6 7.02	+ 2 47.25	+ 1 4.1	23 32 11.11	− 4.32	99 16 19.6	+27.8
	9	ω Piscium		9	53 46.38	− 0.90	− **25.92**	32 36 6.18	+ 3 46.95	+ 36.9	23 53 19.57	. .	83 46 51.2	− 3.7
8, W.	10	β Leonis		9	43 32.08	− 0.95	− **26.84**	23 36 8.82	+ 3 25.84	+ 24.5	11 43 4.25	. .	74 46 20.4	− 1.2
	11	γ Ursæ Majoris		9	48 5.81	− 0.78	− 26.88	344 30 9.78	+ 3 2.43	− 15.5	11 47 38.15	. .	35 39 17.9	− 1.2
	12	o Virginis		3	59 41.68	− 0.98	− **26.94**	29 26 8.58	+ 3 52.65	+ 31.6	11 59 13.81	. .	80 36 54.0	− 1.7
	13	a^2 Can. Venat.		9	50 59.23	− 0.86	− **26.90**	359 52 5.58	+ 4 24.66	− 0.1	12 50 31.46	. .	51 2 51.3	− 1.6
9	14	Sun I, N.		9	59 25.96	− 1.05	− 26.91	44 58 4.75	+ 3 21.53	+ 55.6	12 58 58.00	+64.71	96 8 43.1	. .
	15	Sun II, S.		9	1 35.39	− 1.05	− 26.91	45 30 8.98	+ 3 22.08	+ 56.6	13 1 7.43	−64.72	96 40 48.9	. .
	16	Polaris, S. P.		8	17 32.18	− 4.02	− 26.91	307 32 3.68	+ 3 48.92	− 1 11.9	1 17 1.25	. .	358 41 1.9	− 2.7
	17	α Draconis		9	1 37.93	− 0.71	− 26.93	333 54 2.52	+ 3 46.11	− 27.0	14 1 10.29	. .	25 3 42.8	− 1.3
	18	α Bootis		9	10 46.07	− 0.93	− **26.92**	19 2 6.58	+ 3 27.93	+ 19.1	14 10 18.21	. .	70 12 14.8	− 2.2
	19	Mercury I, N.		9	19 49.17	− 1.12	− 26.93	56 20 7.58	+ 3 55.54	+ 1 22.7	14 19 21.12	+ 0.29	107 31 47.0	. .
	20	ρ Bootis		9	27 13.64	− 0.89	− **26.91**	7 56 4.12	+ 4 5.54	+ 7.7	14 26 45.81	. .	59 6 38.6	− 1.2
	21	ε Bootis		9	40 19.10	− 0.90	− **26.87**	11 16 4.62	+ 3 3.64	+ 11.0	14 39 51.26	. .	62 25 40.5	− 1.4
	22	β Ursæ Minoris		6	51 26.26	− 0.58	− 26.94	324 12 4.18	+ 3 59.22	− 39.6	14 50 58.74	. .	15 21 45.0	1.1
	23	β Bootis		9	57 58.63	− 0.85	− **27.05**	357 58 5.58	+ 4 10.40	− 1.9	14 57 30.83	. .	49 8 35.3	− 0.9
	24	Venus I, N.		9	57 15.04	− 1.16	− 26.97	63 38 4.62	+ 3 16.22	+ 1 50.9	15 56 46.91	+ 1.09	114 49 32.9	. .
13, W.	25	α Ursæ Majoris		9	56 57.88	− 0.62	− 29.89	336 28 7.80	+ 3 5.94	− 24.6	10 56 27.37	. .	27 37 10.3	− 2.4
	26	B. A. C. 3838		.	. . .	. .	. .	12 44 5.40	+ 5 10.80	+ 12.9	11 8.1	. .	63 55 50.3	−19.5
	27	ν Ursæ Majoris		8	12 38.62	− 0.82	− 29.88	5 6 8.45	+ 3 26.46	+ 5.1	11 12 7.92	− 1.90	56 16 1.2	−21.1
	28	λ Draconis		9	24 53.41	− 0.51	− 29.88	328 52 11.08	+ 3 31.61	− 34.1	11 24 23.02	. .	20 1 29.8	− 2.6
	29	β Leonis		2	43 35.14	− 0.91	− **29.88**	23 36 5.20	+ 3 28.93	+ 24.8	11 43 4.35	. .	74 46 20.1	− 2.3
	30	γ Ursæ Majoris		7	48 8.68	− 0.70	− 29.87	344 30 9.09	+ 3 3.40	− 15.6	11 47 38.11	. .	35 39 18.0	− 2.7
	31	a^2 Can. Venat.		9	51 2.14	− 0.80	− **29.85**	359 52 5.95	+ 4 25.05	− 0.1	12 50 31.49	. .	51 2 52.1	− 2.2
	32	Polaris, S. P.		3	17 38.43	− 6.10	− 29.85	307 32 6.45	+ 3 46.74	− 1 13.0	1 17 2.48	. .	358 41 1.4	− 5.0
14	33	Sun I, N.		9	17 57.40	− 1.03	− 29.84	46 50 6.75	+ 4 6.84	+ 1 0.1	13 17 26.53	+65.08	98 1 34.9	. .
	34	Sun II, S.		9	20 7.57	− 1.03	− 29.84	47 22 9.88	+ 4 11.11	+ 1 1.2	13 19 36.70	−65.09	98 33 43.4	. .
	35	η Bootis		9	49 36.19	− 0.89	− **29.78**	19 50 9.28	+ 3 54.23	+ 20.4	13 49 5.46	. .	71 0 45.1	− 0.6
	36	α Draconis		.	. . . .	. .	. .	333 54 9.20	+ 3 40.65	− 27.5	14 1.2	. .	25 3 43.5	− 2.3
	37	α Bootis		9	10 48.96	− 0.89	− **29.86**	19 2 6.68	+ 3 28.54	+ 19.5	14 10 18.24	. .	70 12 15.9	− 2.0
	38	Mercury I, N.		6	18 0.39	− 1.08	− 29.83	55 50 8.55	+ 3 42.30	+ 1 22.8	14 17 29.48	+ 0.32	107 1 34.8	. .
	39	Moon I		9	7 1.64	− 1.09	− 29.81	57 16 . .	. . .	. . .	15 6 30.74	+65.44	107 42 . .	. .
	40	β Libræ		9	11 12.62	− 1.03	− **29.88**	47 46 5.45	+ 3 22.37	+ 1 1.9	15 10 41.78	. .	98 56 50.9	− 0.9
	41	α Cor. Bor.		9	30 13.46	− 0.86	− **29.76**	11 42 5.85	+ 4 32.26	+ 11.7	15 29 42.79	. .	62 53 11.0	− 1.5
	42	Venus I, N.		9	15 22.01	− 1.15	− 29.79	64 44 4.35	+ 2 49.47	+ 1 58.4	16 14 51.07	+ 1.18	115 55 13.4	. .
	43	d Sagittarii		9	11 18.36	− 1.07	− **29.97**	57 57 59.90	+ 3 34.78	+ 1 30.4	19 10 47.33	. .	109 9 26.3	− 3.1
	44	τ Draconis		8	18 18.32	− 0.35	− 29.97	325 42 . .	. . .	. . .	19 17 48.00	. .	16 51 . .	. .
	45	δ Aquilæ		9	20 6.92	− 0.94	− **29.98**	35 56 3.12	+ 3 41.74	+ 41.1	19 19 36.01	. .	87 6 47.2	− 2.2
	46	B. A. C. 6720		5	31 33.00	− 0.73	− 29.97	355 8 4.42	+ 3 53.60	− 4.8	19 31 2.30	− 2.08	46 18 14.4	+31.5
	47	B. A. C. 6723		3	32 49.04	− 0.68	− 29.97	347 52 5.60	+ 2 9.50	− 12.2	19 32 18.39	− 1.78	39 0 24.1	+32.5
	48	Σ (P. M.) 2355		6	41 37.67	− 0.79	− 29.98	5 30 5.15	+ 3 7.46	+ 5.5	19 41 6.90	− 2.52	56 39 39.3	+30.4
	49	(P. M.) 2355		5	41 37.91	− 0.79	− 29.98	5 30 5.15	+ 3 9.30	+ 5.5	19 41 7.14	− 2.52	56 39 41.1	+30.4
	50	λ Ursæ Minoris		2	41 34.55	+ 7.10	− 29.98	309 54 . .	. . .	. . .	19 41 11.67	. .	1 3 . .	. .

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
9	30.13	61.0	58.5		ZENITH-POINT CORR.	14	− 6.3	+ 16 2.9	.	+ 15 56.6
10	30.04	68.0	70.7		″	15	− 6.3	− 16 2.9	.	− 16 9.2
15	30.02	72.4	74.1		1 to 9 + 55.32	19	− 9.1	+ 4.1	.	− 5.0
19	30.01	74.3	79.0	12, 31. One bisection.	10 to 24 + 54.75	24	− 13.8	+ 14.9	.	+ 1.1
24	30.00	75.3	78.3	16. Three bisections.	25 to 42 + 54.64	33	− 6.5	+ 16 4.2	.	+ 15 57.7
25	30.05	64.4	65.6	19, 24, 42. Four bisections.	43 to 49 + 55.55	34	− 6.5	− 16 4.3	.	− 16 10.8
34	30.06	67.5	68.5			38	− 10.1	+ 4.6	.	− 5.5
42	30.04	68.4	70.3			42	− 14.9	+ 15.9	.	+ 1.0
45	30.05	65.3	64.8							

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Oct. 14, W.	1	B. A. C. 6830		9	49 11.53	− 0.70	− 29.98	351 12 10.75	+ 3 22.77	− 8.7	19 48 40.85	− 2.14	42 21 46.0	+33.3
	2	Anoymous		2	58 19.16	− 1.03	− 29.98	51 38 5.82	+ 2 26.27	+ 1 11.7	19 57 48.15	− 3.56	102 48 5.0	+18.0
	3	α^2 Capricorni		9	12 5.06	− 1.03	**− 29.97**	51 44 2.32	+ 2 37.70	+ 1 12.1	20 11 34.04	. .	102 54 13.3	− 2.0
	4	61[1] Cygni		9	2 10.78	− 0.76	**− 30.01**	0 40 5.58	+ 2 41.30	+ 0.7	21 1 40.01	. .	51 49 8.8	− 2.3
	5	ζ Cygni		9	8 29.08	− 0.81	**− 30.03**	9 6 6.05	+ 2 10.40	+ 9.2	21 7 58.25	. .	60 14 46.8	− 2.8
	6	1 Pegasi		9	17 12.19	− 0.86	**− 30.01**	19 30 3.62	+ 4 39.92	+ 20.3	21 16 41.31	. .	70 41 25.0	− 2.1
	7	β Cephei (R)		.	. . . .	. .	. .	211 4 3.32	+ 4 56.58	+ 34.5	. . . .	. .	19 56 46.8	− 1.2
	8	β Cephei		8	27 42.11	− 0.43	− 30.03	328 48 4.32	+ 2 54.81	− 34.5	21 27 11.65	. .	19 56 45.8	− 2.2
	9	ε Pegasi (R)		.	. . . .	. .	. .	150 24 3.88	+ 3 22.63	− 32.4	. . . .	. .	80 39 27.1	+ 1.8
	10	ε Pegasi		.	. . . .	. .	. .	29 30 4.92	+ 2 23.62	+ 32.4	21 38.5	. .	80 39 22.1	− 3.2
30, S.	11	α Gruis		9	1 23.96	− 1.30	− 30.85	86 10 11.68	+ 3 14.18	+11 58.8	22 0 51.81	. .	137 31 45.9	+ 4.7
	12	θ Aquarii		9	11 12.08	− 0.91	**− 30.90**	47 12 12.60	+ 2 8.49	+ 1 1.8	22 10 40.31	. .	98 21 44.1	− 3.7
	13	Carrington 1547, S. P.		9	19 14.81	− 2.17	− 30.86	301 4 5.42	+ 3 7.68	− 1 34.6	10 18 41.78	− 1.31	352 11 59.7	+38.5
	14	η Aquarii		9	29 53.20	− 0.86	**− 30.87**	39 32 9.58	+ 3 41.29	+ 47.4	22 29 21.47	. .	90 42 59.5	− 3.4
	15	ζ Pegasi		9	36 10.19	− 0.80	**− 30.84**	28 36 5.92	+ 3 30.19	+ 31.3	22 35 38.51	. .	79 46 28.6	− 3.3
	16	74 Aquarii		9	47 51.81	− 0.94	− 30.89	51 2 7.75	+ 4 28.12	+ 1 11.0	22 47 19.98	− 4.03	102 14 8.1	+25.1
	17	Weisse 1079		9	53 58.71	− 0.95	− 30.89	52 30 8.75	+ 3 57.99	+ 1 14.9	22 53 26.87	− 4.05	103 41 42.8	+24.8
	18	Weisse 1232		9	0 19.54	− 0.93	− 30.90	49 52 6.92	+ 4 21.21	+ 1 8.2	22 59 47.71	− 4.06	100 3 57.5	+25.9
	19	Weisse 57[1]		6	6 25.07	− 0.94	− 30.90	51 22 10.08	+ 4 12.57	+ 1 12.0	23 5 53.23	− 4.09	102 33 55.8	+25.2
	20	Weisse 57[2]		5	6 25.34	− 0.94	− 30.90	51 22 10.08	+ 4 13.12	+ 1 12.1	23 5 53.50	− 4.09	102 33 56.5	+25.2
	21	Weisse 185		9	12 6.43	− 0.94	− 30.91	51 10 9.28	+ 3 15.35	+ 1 11.5	23 11 34.58	− 4.11	102 20 57.3	+25.3
	22	Weisse 309		9	17 29.19	− 0.94	− 30.91	50 14 4.32	+ 3 7.95	+ 1 9.2	23 16 57.34	− 4.12	101 24 42.7	+25.6
	23	Weisse 377		9	21 4.88	− 0.93	− 30.91	49 30 9.20	+ 2 51.22	+ 1 7.4	23 20 33.04	− 4.14	100 40 29.0	+25.8
	24	Weisse 497		9	26 55.01	− 0.94	− 30.92	50 28 6.28	+ 2 53.62	+ 1 9.8	23 26 23.15	− 4.15	101 38 30.9	+25.6
	25	Weisse 571		9	29 57.27	− 0.93	− 30.92	50 0 12.50	+ 4 13.47	+ 1 8.7	23 29 25.42	− 4.16	101 11 55.9	+25.7
	26	B. A. C. 126 (R)		.	. . . .	. .	. .	203 20 10.65	+ 3 7.50	+ 25.0	. . . .	. .	27 42 38.0	+33.3
	27	B. A. C. 126		.	. . . .	. .	. .	336 34 7.15	+ 2 32.74	− 25.0	0 26.3	. .	27 42 36.1	+33.3
	28	β Ceti		9	38 16.14	− 0.98	**− 30.89**	57 26 7.62	+ 3 38.67	+ 1 30.3	0 37 44.19	. .	101 37 37.8	− 3.4
	29	β Andromedæ		5	3 44.71	− 0.65	**− 31.10**	3 50 12.70	+ 3 9.97	+ 3.9	1 3 13.07	. .	54 59 47.8	− 2.9
	30	Polaris		5	17 24.78	+ 7.99	− 31.00	310 10 8.65	+ 3 23.83	− 1 8.2	1 17 1.77	. .	1 18 45.5	− 1.9
	31	ξ^2 Ceti		9	22 29.79	− 0.82	**− 31.03**	30 54 3.42	+ 2 46.09	+ 34.7	2 21 57.92	. .	82 3 45.4	− 4.4
	32	γ^2 Ceti		9	37 47.76	− 0.85	**− 31.05**	36 4 6.72	+ 4 10.90	+ 42.2	2 37 15.85	. .	87 15 21.0	− 3.8
31, W.	33	δ Ophiuchi		9	8 44.31	− 0.97	**− 31.40**	42 12 7.90	+ 3 58.64	+ 51.2	16 8 11.98	. .	93 23 18.9	− 2.3
	34	τ Herculis		9	16 43.82	− 0.69	**− 31.41**	352 14 7.88	+ 3 50.73	− 7.6	16 16 11.76	. .	43 24 12.2	− 0.7
	35	η Draconis		9	22 53.66	− 0.56	− 31.37	337 4 . .	. . .	. .	16 22 21.73	. .	28 13 . .	. .
	36	β Herculis		9	25 42.43	− 0.84	**− 31.27**	17 4 9.28	+ 4 13.12	+ 17.4	16 25 10.22	. .	68 15 1.0	− 2.0
	37	ζ Ophiuchi		9	31 14.47	− 1.01	**− 31.34**	49 8 8.42	+ 3 58.90	+ 1 5.1	16 30 42.08	. .	100 19 33.6	− 1.5
	38	η Herculis		9	39 23.86	− 0.74	**− 31.44**	359 40 10.45	+ 4 28.96	− 0.3	16 38 51.74	. .	50 51 0.3	− 0.6
	39	Venus I, S.		9	6 10.40	− 1.14	− 31.39	66 46 7.42	+ 4 17.45	+ 2 10.4	17 5 37.87	+ 1.55	117 58 56.5	. .
	40	Venus N.		.	. . . .	. .	. .	66 46 7.42	+ 3 37.15	+ 2 10.3	. . . .	. .	117 58 16.1	. .
	41	ω Piscium		9	53 51.98	− 0.91	**− 31.61**	32 36 8.82	+ 3 46.23	+ 36.3	23 53 19.47	. .	83 46 52.5	− 2.1
	42	α Andromedæ		9	2 54.39	− 0.79	**− 31.55**	10 24 8.70	+ 2 24.52	+ 10.4	0 2 22.00	. .	61 33 4.8	− 2.2
	43	γ Pegasi		9	7 46.59	− 0.87	**− 31.64**	24 18 10.98	+ 2 50.89	+ 25.6	0 7 14.12	. .	75 27 48.7	− 1.8
	44	α Cassiop. (R)		.	. . . .	. .	. .	196 56 7.80	+ 3 53.70	+ 17.3	. . . .	. .	34 6 2.4	− 1.2
	45	α Cassiopeæ		3	34 27.69	− 0.61	− 31.62	342 56 9.75	+ 3 47.79	− 17.3	0 33 55.46	. .	34 6 1.4	− 2.2
	46	Lalande 1251, 2		9	41 17.17	− 0.97	− 31.62	43 54 9.15	+ 1 57.11	+ 54.5	0 40 44.58	− 4.38	95 3 22.0	+25.8
	47	32[2] Camelop., S. P.		4	48 36.34	− 2.20	− 31.62	302 54 8.08	+ 3 44.56	− 1 27.1	12 48 2.52	. .	354 2 46.7	− 0.2
	48	Polaris		2	17 28.25	+ 5.74	− 31.64	310 10 . .	. . .	. .	1 17 2.35	. .	1 19 . .	. .
W.	49	α^2 Canum Venat.		9	51 4.42	− 0.80	**− 31.89**	359 52 11.10	+ 4 24.84	− 0.1	12 50 31.74	. .	51 2 57.0	− 2.8
	50	Polaris, S. P.		4	17 39.92	− 5.73	− 31.89	307 32 . .	. . .	. .	1 17 2.30	. .	358 41 . .	. .

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
3	30.06	64.4	63.3
10	30.08	62.6	60.7
11	30.10	62.8	60.9
25	30.10	59.8	57.5
32	30.07	57.0	54.5
37	30.03	66.3	67.9
40	30.03	67.8	69.3
41	30.05	65.8	65.3
48	30.04	65.3	64.3
49	30.16	67.7	72.6

For summary of the constants of reduction see page 3.

30. Three bisections.
11. Four bisections.

ZENITH-POINT CORR.

″
1 to 10 + 55.55
11 to 32 + 55.30
33 to 40 + 54.81
41 to 47 + 55.94
49 + 54.52

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
39	− 19.6	− 20.4	+ 0.3	− 39.7
40	− 19.6	+ 20.4	.	+ 0.8

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
October 31, W.	1	α Virginis . . .	.	9	19 33.81	− 1.04	**− 31.88**	49 22 9.68	+ 3 13.44	+ 1 5.0	13 19 0.88	. .	100 32 49.3	− 3.8
Nov. 1	2	α Aquarii . . .	.	9	0 20.27	− 0.97	**− 32.18**	39 42 10.00	+ 3 43.94	+ 46.9	21 59 47.15	. .	90 53 2.0	− 3.8
	3	θ Aquarii . . .	.	9	11 13.38	− 1.01	**− 32.13**	47 12 10.12	+ 2 12.25	+ 1 1.0	22 10 40.21	. .	98 21 44.6	− 3.4
	4	Carrington 1547, S. P.	.	5	19 16.14	− 1.74	− 32.16	301 4 7.48	+ 3 4.01	− 1 33.3	10 18 42.24	− 1.65	352 11 59.4	+39.0
	5	α Piscis Austr. .	.	9	51 45.17	− 1.17	**− 32.18**	69 2 10.75	+ 3 29.67	+ 2 27.2	22 51 11.82	. .	120 14 28.8	− 2.2
	6	α Pegasi . . .	.	9	59 30.13	− 0.89	**− 32.17**	24 16 9.62	+ 2 14.39	+ 25.6	22 58 57.06	. .	75 25 10.8	− 2.6
	7	ψ Aquarii . . .	.	9	10 19.86	− 1.02	− 32.19	48 32 8.85	+ 3 47.87	+ 1 4.3	23 9 46.65	− 4.09	99 43 22.2	+26.0
	8	o Cephei . . .	.	9	11 25.73	− 0.50	− 32.19	331 22 7.32	+ 3 24.03	− 30.9	23 13 53.04	. .	22 31 21.7	− 1.2
2, W.	9	ζ^1 Cancri . . .	.	6	6 3.83	− 0.48	− 32.76	20 50 7.65	+ 3 13.00	+ 23.4	8 5 30.59	− 3.97	72 0 5.2	−16.3
	10	ζ^2 Cancri . . .	.	5	6 4.12	− 0.48	− 32.76	20 50 7.65	+ 3 15.21	+ 23.4	8 5 30.88	− 3.97	72 0 7.5	−16.3
	11	D. M. +7°, 1981	8.7	9	22 38.82	− 0.58	− 32.76	31 36 8.32	+ 6 7.87	+ 37.8	8 22 5.48	− 3.65	82 49 15.2	−13.6
	12	η Cancri . . .	.	9	26 30.10	− 0.46	**− 32.73**	18 0 . .	. . .	. .	8 25 56.88	. .	69 10 . .	. .
	13	Brisbane 2071 .	.	9	28 11.77	− 1.07	− 32.76	77 26 7.90	+ 2 59.58	+ 4 30.3	8 27 37.94	− 2.78	128 39 59.0	− 0.8
	14	Yarnall 3586 .	7	9	34 13.66	− 0.46	− 32.76	18 36 1.95	+ 2 26.83	+ 20.7	8 33 40.44	− 3.80	69 45 10.7	−19.0
	15	O. Arg. S. 8965 .	.	9	41 37.92	− 0.88	− 32.76	63 4 4.55	+ 2 27.13	+ 2 0.4	8 41 4.28	− 3.04	114 14 53.3	− 4.9
	16	12-Yr. Cat., 1879, S. P.	.	9	53 28.53	− 3.23	− 32.76	298 58 2.32	+ 4 35.72	− 1 50.0	20 52 52.54	. .	350 7 9.2	− 2.3
	17	κ Cancri . . .	.	9	1 58.07	− 0.54	**− 32.75**	27 42 3.82	+ 2 44.05	+ 32.3	9 1 24.77	. .	78 51 41.4	− 3.7
	18	Moon II, S. . .	.	9	19 27.71	− 0.56	− 32.76	29 18 3.35	+ 4 10.08	+ 34.5	9 18 54.39	−62.70	80 29 9.1	. .
	19	β Cephei, S. P. .	.	9	27 44.86	− 1.85	− 32.76	288 55 58.50	+ 3 51.31	− 2 56.5	21 27 10.25	. .	340 3 14.5	− 0.4
	20	ε Leonis . . .	.	9	39 45.56	− 0.42	**− 32.75**	14 30 7.30	+ 4 36.05	+ 16.0	9 39 12.38	. .	65 41 20.6	− 2.1
	21	μ Leonis . . .	.	9	46 39.50	− 0.40	**− 32.81**	12 15 57.15	+ 4 6.96	+ 13.4	9 46 6.34	. .	63 26 38.7	− 2.3
W.	22	γ Corvi . . .	.	8	10 20.09	− 0.88	**− 32.45**	55 42 6.10	+ 3 24.85	+ 1 29.0	12 9 46.74	. .	106 53 21.2	− 2.7
	23	η Virginis . . .	.	9	14 27.74	− 0.74	**− 32.51**	38 50 4.40	+ 3 36.59	+ 48.9	12 13 54.53	. .	90 0 51.1	− 3.7
	24	κ Draconis . .	.	9	28 57.71	+ 0.39	− 32.47	328 23 57.85	+ 4 25.55	− 37.2	12 28 25.63	. .	19 34 7.4	− 2.7
	25	α^2 Canum Venat. .	.	9	51 4.90	− 0.39	− 32.48	359 52 1.55	+ 4 35.56	− 0.1	12 50 32.03	. .	51 2 58.2	− 2.2
	26	Polaris, S. P. . .	.	5	17 50.66	−17.18	− 32.49	307 31 59.62	+ 4 8.75	− 1 18.3	1 17 0.99	. .	358 41 11.3	− 2.7
	27	α Virginis . . .	.	9	19 34.24	− 0.83	**− 32.49**	49 22 3.95	+ 3 14.63	+ 1 10.4	13 19 0.92	. .	100 32 50.2	− 3.0
	28	Mercury C . .	.	9	29 59.22	− 0.80	− 32.49	46 2 7.62	+ 3 7.53	+ 1 2.6	13 29 25.93	− 0.13	97 12 39.0	. .
	29	α Draconis . .	.	9	1 42.37	+ 0.13	− 32.50	333 53 56.12	+ 4 2.79	− 29.4	14 1 10.00	. .	25 3 50.7	− 2.5
3	30	Sun I, N. . .	.	9	34 29.12	− 0.87	− 32.51	53 43 59.88	+ 3 57.07	+ 1 21.9	14 33 55.74	+67.12	104 55 40.1	. .
	31	Sun II, S. . .	.	9	36 43.37	− 0.87	− 32.51	54 16 10.65	+ 4 6.25	+ 1 23.5	14 36 9.99	−67.13	105 28 1.6	. .
	32	η Herculis . . .	.	9	39 24.70	− 0.39	**− 32.66**	359 40 6.72	+ 4 33.12	− 0.3	16 38 50.75	. .	50 51 0.7	− 0.9
	33	κ Ophiuchi . .	.	9	52 40.18	− 0.66	**− 32.60**	29 16 6.10	+ 3 17.08	+ 33.4	16 52 6.96	. .	80 26 17.8	− 1.1
	34	η Ophiuchi . .	.	9	4 12.78	− 0.87	− 32.56	54 23 57.12	+ 2 52.60	+ 1 23.0	17 3 39.35	− 2.63	105 34 33.9	+ 3.3
	35	Venus I, N. . .	.	5	12 29.37	− 0.99	− 32.57	66 52 2.38	+ 2 49.50	+ 2 18.6	17 11 55.81	+ 1.63	118 3 31.7	. .
	36	Venus S. . .	.	.	. . . .	. .	. .	66 52 2.38	+ 3 32.69	+ 2 18.7	. . . .	. .	118 4 15.0	. .
	37	β Draconis . .	.	9	28 18.62	− 0.20	− 32.57	346 25 57.58	+ 4 17.96	− 14.3	17 27 45.85	. .	37 36 22.4	− 0.8
	38	ι Herculis . . .	.	5	36 41.54	− 0.30	− 32.57	352 46 3.40	+ 3 14.76	− 7.5	17 36 8.67	− 0.37	43 55 31.9	+16.7
	39	μ Herculis . . .	.	9	42 24.91	0.51	**− 32.50**	11 2 11.48	+ 3 32.99	+ 11.7	17 41 51.82	. .	62 12 17.4	− 2.1
	40	η Serpentis . .	.	.	. . . .	. .	. .	41 44 1.12	+ 4 12.74	+ 53.1	18 15.2	. .	92 55 28.2	− 0.9
	41	χ Draconis . . .	.	9	23 39.43	+ 0.54	− 32.59	326 10 0.62	+ 2 58.95	− 39.7	18 23 7.38	+ 3.87	17 18 41.1	+24.4
	42	1 Aquilæ . . .	.	9	29 23.30	− 0.81	**− 32.58**	47 8 4.75	+ 3 47.79	+ 1 4.1	18 28 49.90	. .	98 19 17.8	− 1.7
	43	α Lyræ . . .	.	9	33 30.83	− 0.40	**− 32.54**	0 10 7.50	+ 2 36.67	+ 0.2	18 32 57.84	. .	51 19 5.6	− 2.6
5, S.	44	Polaris, S. P. . .	.	5	17 52.42	−21.98	− 30.52	307 32 5.75	+ 4 4.43	− 1 17.9	1 16 59.92	. .	358 41 13.5	− 1.5
	45	α Virginis . . .	.	9	19 32.24	− 0.80	**− 30.47**	49 22 7.98	+ 3 10.47	+ 1 10.0	13 19 0.92	. .	100 32 49.6	− 3.9
	46	Mercury C . .	.	9	37 43.87	− 0.78	− 30.51	46 32 7.38	+ 4 3.54	+ 1 3.3	13 37 12.58	− 0.09	97 43 35.4	. .
	47	η Bootis . . .	.	9	49 36.67	− 0.51	**− 30.48**	19 50 5.08	+ 4 1.86	+ 21.7	13 49 5.65	. .	71 0 49.8	− 0.8
	48	α Bootis . . .	.	9	10 49.39	− 0.50	**− 30.57**	19 1 58.50	+ 3 41.23	+ 20.7	14 10 18.40	. .	70 12 21.6	− 1.3
6	49	α Aquarii . . .	.	8	0 17.97	− 0.72	**− 30.20**	39 42 1.65	+ 3 50.38	+ 49.8	21 59 47.01	. .	90 53 3.0	− 2.9
	50	α Gruis . . .	.	9	1 23.11	− 1.49	− 30.24	86 10 4.22	+ 2 45.43	+12 36.4	22 0 51.38	. .	137 31 47.2	+ 5.3

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
2	30.15	68.6	68.6
5	30.15	67.6	66.3
10	30.50	38.3	33.6
21	30.50	36.7	33.3
22	30.51	40.6	38.4
31	30.45	44.0	42.8
32	30.40	46.3	46.7
43	30.38	47.6	46.7
45	30.30	41.4	40.3
50	30.25	43.3	40.7

For summary of the constants of reduction see page 3.

9, 10, 35, 36, 38, 40. One bisection.
16, 26, 44. Three bisections.
28. Four bisections.
18. Five bisections.

ZENITH-POINT CORR.

	″
1	+ 54.52
2 to 8	+ 54.27
9 to 21	+ 57.70
22 to 43	+ 56.78
44 to 50	+ 56.17

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
18	− 26 38.3	− 14 55.9	.	− 41 34.2
28	− 7.2	. .	− 0.9	− 8.1
30	− 7.2	+ 16 10.7	.	+ 16 3.5
31	− 7.3	− 16 10.7	.	− 16 18.0
35	− 20.6	+ 21.9	.	+ 1.3
36	− 20.6	− 21.9	+ 0.5	− 42.0
46	− 6.7	. .	− 0.7	− 7.4

21. Barometer and thermometers read at $10^h\ 0^m$.

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Nov.														
6, S.	1	θ Aquarii . . .	.	9	11 11.20	− 0.80	**− 30.23**	47 12 5.18	+ 2 13.89	+ 1 4.7	22 10 40.17	. .	98 21 45.0	− 3.3
	2	Carrington 1547, S.P.	.	9	19 17.41	− 4.12	− 30.23	301 3 57.48	+ 3 17.92	− 1 38.9	10 18 43.06	− 2.48	352 11 57.7	+40.0
	3	η Aquarii . . .	.	9	29 52.41	− 0.72	**− 30.30**	39 32 4.48	+ 3 45.65	+ 49.5	22 29 21.47	. .	90 43 0.8	− 2.3
	4	ζ Pegasi . . .	.	9	36 9.27	− 0.62	**− 30.18**	28 36 0.02	+ 3 35.03	+ 32.7	22 35 38.43	. .	79 46 28.9	− 3.0
	5	74 Aquarii . . .	.	9	47 50.92	− 0.84	− 30.21	51 2 6.38	+ 4 28.19	+ 1 14.2	22 47 19.87	− 3.94	102 14 10.0	+24.5
	6	Weisse 1079 .	.	9	53 57.90	− 0.85	− 30.21	52 30 3.30	+ 4 0.98	+ 1 18.1	22 53 26.84	− 3.97	103 41 43.6	+24.1
	7	Weisse 1156 .	.	9	56 56.33	− 0.83	− 30.21	50 41 59.60	+ 3 57.22	+ 1 13.3	22 56 25.29	− 3.97	101 53 31.3	+24.7
	8	Weisse 1261 .	.	8	1 48.70	− 0.84	− 30.21	51 14 2.22	+ 4 33.57	+ 1 14.7	23 1 17.65	− 3.99	102 26 11.7	+24.6
	9	o Cephei . . .	.	9	14 22.23	+ 0.50	− 30.20	331 22 . .	. . . .	. .	23 13 52.53	. .	22 31 . .	. .
	10	θ Piscium . . .	.	9	22 33.90	− 0.66	**− 30.20**	33 6 2.80	+ 2 31.89	+ 39.1	23 22 3.04	. .	84 15 35.0	− 4.0
8, W.	11	α Aquarii . . .	.	9	0 17.02	− 0.78	**− 29.22**	39 42 5.82	+ 3 47.68	+ 49.0	21 59 47.06	. .	90 53 3.7	− 2.3
	12	π^1 Pegasi . . .	.	5	4 33.11	− 0.48	− 29.18	6 14 5.20	+ 3 2.13	+ 6.5	22 4 3.45	− 3.45	57 23 35.0	+37.1
	13	π^2 Pegasi . . .	.	9	5 17.92	− 0.48	29.18	6 14 5.20	+ 2 49.83	+ 6.5	22 4 48.26	− 3.46	57 23 22.7	+37.1
	14	θ Aquarii . . .	.	9	11 10.19	− 0.84	**− 29.21**	47 12 6.70	+ 2 14.45	+ 1 3.6	22 10 40.17	. .	98 21 46.0	− 2.4
	15	γ Aquarii . . .	.	9	16 7.38	− 0.79	− 29.18	40 48 4.10	+ 3 8.10	+ 51.0	22 15 37.41	− 3.71	91 58 24.4	+27.2
	16	π Aquarii . . .	.	9	19 48.64	− 0.76	**− 29.09**	38 2 6.05	+ 3 31.17	+ 46.1	22 19 18.70	. .	89 12 44.5	− 2.6
	17	B. A. C. 7855 .	.	9	26 59.16	− 0.25	− 29.18	349 10 7.55	+ 2 26.49	− 11.2	22 26 29.73	− 3.71	40 18 44.0	+40.3
	18	ζ Pegasi . . .	.	8	36 8.32	− 0.68	**− 29.20**	28 36 4.02	+ 3 31.52	+ 32.3	22 35 38.46	. .	79 46 29.0	− 2.9
	19	λ Pegasi . . .	.	9	41 24.47	− 0.57	− 29.17	15 52 8.50	+ 3 54.11	+ 16.9	22 40 54.73	− 3.82	67 2 40.7	+34.9
	20	Weisse 966 . .	.	9	48 27.76	− 0.88	− 29.17	51 38 7.40	+ 2 49.74	+ 1 14.6	22 47 57.71	− 3.91	102 48 32.9	+24.1
	21	Weisse 1156 .	.	9	56 55.33	− 0.87	− 29.17	50 42 3.42	+ 3 54.73	+ 1 12.3	22 56 25.29	− 3.94	101 53 31.7	+24.5
	22	Weisse 1204 .	.	9	58 52.79	− 0.88	− 29.17	51 38 12.22	+ 2 37.58	+ 1 14.6	22 58 22.74	− 3.95	102 48 25.6	+24.2
	23	Weisse 1261 .	.	9	1 47.70	− 0.88	− 29.17	51 14 2.25	+ 4 34.90	+ 1 13.7	23 1 17.65	− 3.96	102 26 12.1	+24.4
	24	Weisse 49 . .	.	9	5 53.73	− 0.87	− 29.17	49 58 3.42	+ 2 52.47	+ 1 10.4	23 5 23.69	− 3.97	101 8 27.5	+24.8
	25	Lalande 45504 .	.	9	9 45.67	− 0.88	− 29.17	51 0 3.52	+ 4 22.33	+ 1 13.1	23 9 15.62	− 3.99	102 12 0.1	+24.5
	26	Weisse 185 . .	.	9	12 4.57	− 0.88	− 29.17	51 10 8.18	+ 3 16.23	+ 1 13.5	23 11 34.52	− 3.99	102 20 59.1	+24.4
	27	Weisse 265 . .	.	9	15 18.31	− 0.87	− 29.17	49 58 6.30	+ 4 36.10	+ 1 10.5	23 14 48.27	− 4.01	101 10 14.1	+24.8
	28	Weisse 309 . .	.	9	17 27.40	− 0.87	− 29.16	50 13 59.62	+ 3 12.21	+ 1 11.1	23 16 57.37	− 4.01	101 24 44.1	+24.8
	29	Weisse 402 . .	.	9	22 30.94	− 0.88	− 29.16	50 54 1.08	+ 3 52.90	+ 1 12.8	23 22 0.90	− 4.03	102 5 28.0	+24.6
	30	Weisse 571 . .	.	9	29 55.52	− 0.88	− 29.16	50 0 7.38	+ 4 20.13	+ 1 10.6	23 29 25.48	− 4.06	101 11 59.3	+24.8
	31	Weisse 629 . .	.	9	32 40.97	− 0.85	− 29.16	48 6 3.35	+ 2 51.34	+ 1 6.0	23 32 10.96	− 4.07	99 16 21.9	+25.4
	32	δ Sculptoris . .	.	9	43 21.02	− 1.05	− 29.16	67 34 3.10	+ 3 48.72	+ 2 23.0	23 42 50.81	− 4.10	118 46 36.0	+19.6
	33	ω Piscium (R) . .	.	.	. . . .	. .	. .	147 16 5.95	+ 3 57.50	− 38.0	. . . .	. .	83 46 55.8	+ 1.0
	34	ω Piscium . . .	.	.	. . . .	. .	. .	32 36 7.20	+ 3 45.46	+ 38.0	23 53.3	. .	83 46 51.9	− 2.9
	35	δ Piscium . . .	.	9	43 8.03	− 0.71	− 29.14	31 52 0.90	+ 3 57.42	+ 37.0	0 42 38.18	− 4.48	83 2 56.5	+27.5
	36	D. M. + 60°, 146	.	9	55 56.42	0.00	− 29.14	337 53 58.88	+ 2 23.06	− 24.1	0 55 27.28	− 6.88	29 2 19.0	+32.5
	37	B. A. C. 302 . .	.	9	59 33.17	+ 0.03	− 29.14	336 42 5.00	+ 3 38.43	− 25.5	0 59 4.06	− 7.09	27 51 39.1	+32.1
	38	B. A. C. 362. .	.	9	7 23.29	− 1.08	− 29.14	70 12 1.55	+ 4 8.18	+ 2 44.4	1 6 53.07	− 4.18	121 25 15.3	+18.6
	39	Taylor 407 . .	.	9	10 26.51	− 1.32	− 29.14	84 50 7.35	+ 3 9.38	+ 9 54.2	1 9 56.05	− 4.13	136 9 32.1	+15.6
	40	Polaris . . .	.	6	17 12.13	+16.23	− 29.14	310 10 8.32	+ 3 23.82	− 1 10.3	1 16 59.22	. .	1 18 43.0	− 1.2
	41	η Piscium . . .	.	9	25 44.78	− 0.65	**− 29.11**	24 6 2.45	+ 2 27.30	+ 26.7	1 25 15.00	. .	75 15 17.7	− 2.7
	42	B. A. C. 489 . .	.	9	31 15.82	− 1.07	− 29.13	69 20 5.90	+ 1 18.83	+ 2 36.8	1 30 45.62	− 4.18	120 30 22.7	+18.4
	43	o Piscium . . .	.	9	39 44.38	− 0.70	**− 29.15**	30 16 2.85	+ 2 46.73	+ 34.8	1 39 14.55	. .	81 25 45.6	− 2.6
	44	B. A. C. 558 . .	.	9	44 50.87	− 0.16	− 29.13	344 16 4.12	+ 3 39.48	− 16.7	1 44 21.58	− 6.84	35 25 48.1	+26.7
	45	β Arietis . . .	.	9	48 42.21	− 0.60	**− 29.20**	18 36 1.35	+ 3 0.80	+ 20.1	1 48 12.48	. .	69 45 43.5	− 1.6
	46	α Arietis . . .	.	9	1 6.21	− 0.57	**− 29.06**	15 56 0.18	+ 2 41.18	+ 17.1	2 0 36.52	. .	67 5 19.7	− 3.1
	47	Astræa . . .	.	9	16 49.96	− 0.73	− 29.12	34 6 4.08	+ 1 54.18	+ 40.5	2 16 20.11	. .	85 15 0.0	− 3.1
	48	B. A. C. 2300[1] .	.	.	. . . .	. .	. .	345 54 2.32	+ 4 10.77	− 15.1	. . . .	. .	37 4 19.2	−20.4
	49	B. A. C. 2300[2] .	.	.	. . . .	. .	. .	345 54 2.32	+ 4 15.21	− 15.1	6 56.3	. .	37 4 23.6	−20.4
	50	δ Geminorum . .	.	9	13 38.83	− 0.52	**− 29.17**	16 38 4.82	+ 3 34.20	+ 18.1	7 13 9.16	. .	67 48 18.3	− 1.8

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
13	30.24	51.0	48.6		ZENITH-POINT CORR.					
20	30.25	49.7	47.4		″					
31	30.25	48.6	46.3							
46	30.24	46.3	42.6	12, 13, 48, 49. One bisection.	1 to 10 + 56.71					
50	. .	. .	37.2	47. Four bisections.	11 to 50 + 56.71					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Sept. 18, W.	1	Anonymous	8	6	30 46.72	− 0.83	− 20.68	57 48 5.55	+ 3 34.90	+ 1 28.4	19 30 25.21	− 4.03	108 59 30.0	+14.5
	2	Lalande 37303	8	9	33 3.78	− 0.70	− 20.69	358 8 11.70	+ 2 47.67	− 1.8	19 32 42.39	− 2.88	49 17 18.8	+29.4
	3	17¹ Cygni	6	6	42 21.42	− 0.70	− 20.69	5 22 5.98	+ 3 43.03	+ 5.3	19 42 0.03	− 3.10	56 32 15.5	+28.8
	4	17² Cygni	5	5	42 23.43	− 0.70	− 20.69	5 22 5.98	+ 3 34.57	+ 5.3	19 42 2.04	− 3.10	56 32 7.1	+28.8
	5	Weisse (2) 1501	7	7	47 28.37	− 0.72	− 20.70	14 8 4.92	+ 3 25.89	+ 14.1	19 47 6.95	− 3.29	65 18 6.1	+27.5
	6	B. A. C. 6843	9	9	52 29.51	− 0.92	− 20.70	74 22 9.25	+ 3 38.43	+ 3 17.0	19 52 7.89	− 4.60	125 35 25.9	+11.2
	7	B. A. C. 6886	9	9	58 26.64	− 0.90	− 20.71	72 6 5.38	+ 4 25.45	+ 2 51.5	19 58 5.03	− 4.54	123 19 43.5	+12.4
	8	31 Cygni (R)			. . . .	. .	. .	187 26 5.68	+ 3 40.12	+ 7.3	. . . .	. .	43 36 28.1	+31.4
	9	31 Cygni			. . . .	. .	. .	352 28 7.78	+ 2 2.95	− 7.3	20 10.0	. .	43 36 24.6	+31.4
	10	B. A. C. 7029 (R)			. . . .	. .	. .	172 52 8.28	+ 3 25.83	− 6.9	. . . .	. .	58 10 54.0	+30.0
	11	B. A. C. 7029			. . . .	. .	. .	7 2 10.28	+ 2 15.30	+ 6.9	20 19.2	. .	58 10 53.7	+30.0
	12	θ Aquarii	9	9	11 2.29	− 0.79	**− 20.83**	47 12 8.40	+ 2 13.16	+ 1 0.6	22 10 40.69	. .	98 21 43.4	− 3.0
	13	Groom. 3756	9	9	17 23.17	− 0.76	− 20.81	322 56 6.38	+ 4 2.41	− 42.2	22 17 1.60	− 6.73	14 5 47.8	+28.8
	14	η Aquarii	9	9	29 43.41	− 0.77	**− 20.82**	39 32 5.98	+ 3 47.14	+ 46.4	22 29 21.82	. .	90 43 0.7	− 2.1
	15	ζ Pegasi	9	9	36 0.43	− 0.74	**− 20.80**	28 36 7.88	+ 3 32.15	+ 30.7	22 35 38.87	. .	79 46 31.9	− 2.1
	16	74 Aquarii	9	9	47 41.86	− 0.80	− 20.83	51 2 10.20	+ 4 26.99	+ 1 9.5	22 47 20.23	− 4.32	102 14 7.9	+27.5
	17	Weisse 1047	9	9	52 21.26	− 0.80	− 20.84	50 34 7.15	+ 3 38.29	+ 1 8.3	22 51 59.62	− 4.32	101 45 14.9	+27.5
	18	Weisse 1079	9	9	53 48.76	− 0.81	− 20.84	52 30 11.42	+ 3 56.45	+ 1 13.2	22 53 27.11	− 4.33	103 41 42.3	+27.5
	19	Weisse 1204	9	9	58 44.73	− 0.80	− 20.84	51 38 10.08	+ 2 39.78	+ 1 10.9	22 58 23.09	− 4.32	102 48 22.0	+27.6
	20	Weisse 1261	9	9	1 39.56	− 0.80	− 20.84	51 14 8.70	+ 4 29.73	+ 1 10.0	23 1 17.92	− 4.32	102 26 9.6	+27.7
	21	Weisse 49	9	9	5 45.60	− 0.80	− 20.85	49 58 8.98	+ 2 46.92	+ 1 6.8	23 5 23.95	− 4.31	101 8 23.9	+27.9
	22	ψ Aquarii	9	9	10 8.51	− 0.79	− 20.85	48 32 10.20	+ 3 44.41	+ 1 3.6	23 9 46.87	− 4.31	99 43 19.4	+28.1
	23	Weisse 265	9	9	15 10.16	− 0.80	− 20.85	49 58 7.38	+ 4 36.35	+ 1 6.9	23 14 48.51	− 4.31	102 10 11.8	+28.0
	24	Weisse 377	9	9	20 54.86	− 0.80	− 20.86	49 30 8.30	+ 2 53.34	+ 1 5.8	23 20 33.20	− 4.30	100 40 28.6	+28.1
	25	Weisse 497	9	9	26 44.90	− 0.80	− 20.86	50 28 3.50	+ 2 58.50	+ 1 8.1	23 26 23.24	− 4.30	101 38 31.3	+28.1
	26	Weisse 586	9	9	30 20.66	− 0.79	− 20.87	48 14 5.95	+ 3 3.53	+ 1 3.0	23 29 59.00	− 4.30	99 24 33.7	+28.2
	27	Weisse 629	9	9	32 32.67	− 0.79	− 20.87	48 6 8.75	+ 2 46.68	+ 1 2.6	23 32 11.01	− 4.29	99 16 19.2	+28.3
S.	28	α Leonis	9	9	2 28.87	− 0.75	**− 20.91**	26 18 10.70	+ 2 35.34	+ 27.3	10 2 7.19	. .	77 27 34.5	− 3.1
	29	γ¹ Leonis	9	9	13 51.61	− 0.75	**− 20.95**	18 24 7.68	+ 3 8.75	+ 18.4	10 13 29.93	. .	69 33 56.0	− 2.7
19	30	Sun I, S.	9	9	46 56.02	− 0.75	− 20.96	37 44 3.60	+ 4 27.89	+ 42.4	11 46 34.31	+63.97	88 55 35.1	. .
	31	Sun II, N.	9	9	49 3.96	− 0.75	− 20.96	37 12 7.08	+ 4 32.20	+ 41.6	11 48 42.25	−63.97	88 23 42.1	. .
	32	α² Can. Venat.	9	9	50 53.22	− 0.78	**− 20.99**	359 52 10.78	+ 4 14.12	− 0.1	12 50 31.47	. .	51 2 46.0	− 1.7
	33	Mercury C	9	9	15 16.71	− 0.76	− 20.98	48 38 9.50	+ 3 13.44	+ 1 1.7	13 14 54.97	+ 0.04	99 48 45.8	. .
	34	Polaris, S. P.	6	6	17 10.60	+ 7.63	− 20.98	307 32 8.42	+ 3 34.03	− 1 10.4	1 16 57.25	. .	358 40 53.2	− 3.9
	35	α Virginis	9	9	19 22.41	− 0.77	**− 20.96**	49 22 . .	. . . .	. . . .	13 19 0.66	. .	100 33 . .	. .
	36	Venus I, N.	9	9	39 28.76	− 0.78	− 20.99	57 14 10.35	+ 3 30.15	+ 1 24.1	14 39 6.99	+ 0.83	108 25 25.8	. .
	37	Moon I, N.	9	9	13 34.27	− 0.79	− 21.10	60 2 9.00	+ 4 10.60	+ 1 34.8	17 13 12.38	+68.79	111 14 15.6	. .
	38	α Ophiuchi	9	9	29 52.00	− 0.76	**− 21.13**	26 10 11.78	+ 3 55.06	+ 27.0	17 29 30.12	. .	77 20 55.0	− 1.9
	39	O. Arg. N. 17464	9	9	39 44.18	− 1.17	− 21.13	326 20 7.65	+ 2 37.45	− 36.4	17 39 21.88	+ 1.37	17 28 29.9	+23.5
	40	γ² Sagittarii	9	9	58 39.57	− 0.82	**− 21.15**	69 12 7.38	+ 4 29.83	+ 2 23.7	17 58 17.59	. .	120 25 22.1	− 2.1
	41	B. A. C. 6145 (s)	9	9	2 55.19	− 0.82	− 21.16	69 32 10.02	+ 3 44.77	+ 2 26.2	18 2 33.21	− 3.96	120 44 42.2	+ 2.6
	42	Weisse (2) 1218	9	9	41 44.03	− 0.77	− 21.21	12 18 5.98	+ 2 41.83	+ 12.0	18 41 22.05	− 2.77	63 27 21.0	+23.9
	43	B. A. C. 6414	9	9	45 33.36	− 0.82	− 21.21	69 40 13.50	+ 3 11.67	+ 2 27.7	18 45 11.33	− 4.17	120 52 14.1	+ 6.5
	44	Weisse (2) 1528	9	9	51 18.89	− 0.76	− 21.22	20 52 11.05	+ 3 11.17	+ 21.0	18 50 56.91	− 3.03	72 2 4.4	+22.6
	45	Lalande 35560	9	9	57 17.74	− 0.76	− 21.23	37 12 8.55	+ 4 18.89	+ 41.9	18 56 55.75	− 3.41	88 23 30.5	+18.4
	46	Lalande 36268²	9	9	11 27.93	− 0.76	− 21.25	24 30 8.90	+ 2 26.56	+ 25.2	19 11 5.92	− 3.23	75 39 21.9	+23.1
	47	ρ¹ Sagittarii	9	9	15 15.70	− 0.78	− 21.25	56 52 9.58	+ 3 54.25	+ 1 24.7	19 14 53.67	− 3.94	108 3 49.7	+13.5
	48	Weisse 728	9	9	30 29.99	− 0.76	− 21.27	23 28 7.30	+ 3 34.86	+ 24.0	19 30 7.96	− 3.33	74 38 27.4	+24.6
	49	λ Ursæ Minoris	3	3	42 17.93	−11.11	− 21.28	309 54 7.90	+ 3 11.65	− 1 5.9	19 41 45.54	. .	1 2 34.9	− 1.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
8	30.04	73.7	72.2		ZENITH-POINT CORR.	30	− 5.4	− 15 56.4	.	− 16 1.8
11	30.05	73.6	71.8			31	− 5.3	+ 15 56.5	.	+ 15 51.2
12	30.05	71.8	70.1		″	33	− 5.8	. .	+ 0.3	− 5.5
27	30.05	70.6	68.9	2, 36. One bisection.	1 to 27 + 52.49	36	− 10.1	+ 11.8	.	+ 1.7
28	30.08	77.8	78.8	34, 37. Three bisections.	28 to 36 + 50.17	37	− 48 59.6	+ 15 28.5	.	− 33 31.1
30	30.08	81.9	83.7	33. Four bisections.	37 to 49 + 51.21					
32	30.06	84.2	86.5							
36	30.03	86.2	88.0							
37	30.02	82.8	82.5							
46	30.02	79.8	78.1							

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
Sept.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
19, S.	1	β Aquilæ		9	49 56.62	− 0.76	**− 21.23**	32 42 8.35	+ 3 42.39	+ 35.6	19 49 34.57	. .	83 52 47.5	− 3.0
	2	τ Aquilæ		9	58 48.23	− 0.76	**− 21.27**	31 52 12.15	+ 3 41.12	+ 34.5	19 58 26.17	. .	83 2 49.0	− 2.0
	3	a^2 Capricorni		9	11 56.54	− 0.78	**− 21.30**	51 44 8.30	+ 2 33.44	+ 1 10.2	20 11 34.44	. .	102 54 13.1	− 1.7
	4	ν Cygni		9	53 12.36	− 0.80	**− 21.48**	358 8 . .	. . .	. .	20 52 50.19	. .	49 17 . .	. .
W.	5	α Hydræ		9	22 11.91	− 0.79	**− 21.81**	46 58 8.35	+ 3 29.87	+ 59.2	9 21 49.31	. .	98 8 58.6	− 2.6
	6	θ Ursæ Majoris		9	25 22.50	− 0.84	− 21.82	346 38 9.82	+ 3 12.75	− 13.1	9 24 59.84	. .	37 47 30.7	− 1.2
	7	ε Leonis		9	39 33.81	− 0.77	**− 21.79**	14 30 10.18	+ 4 26.92	+ 14.4	9 39 11.22	. .	65 41 12.7	− 2.7
	8	μ Leonis		9	46 27.81	− 0.77	**− 21.89**	12 16 9.22	+ 3 47.79	+ 12.0	9 46 5.22	. .	63 26 30.2	− 3.0
	9	α Leonis		9	2 29.82	− 0.77	**− 21.83**	26 18 5.65	+ 2 41.25	+ 27.2	10 2 7.22	. .	77 27 35.3	− 2.4
	10	γ^1 Leonis		3	13 52.51	− 0.77	**− 21.81**	18 24 3.20	+ 3 13.82	+ 18.3	10 13 29.90	. .	69 33 56.5	− 2.3
	11	γ^2 Leonis		4	13 52.77	− 0.77	− 21.84	18 24 3.20	+ 3 14.95	+ 18.3	10 13 30.16	− 1.96	69 33 57.7	−15.2
	12	Comet 1882 II		9	14 41.60	− 0.78	− 21.86	39 24 5.42	+ 3 16.91	+ 45.0	11 14 18.96	. .	90 34 28.5	. .
20	13	Sun I, N.		9	50 32.44	− 0.78	− 21.88	37 36 7.95	+ 3 50.72	+ 42.1	11 50 9.78	+63.92	88 47 2.0	. .
	14	Sun II, S.		9	52 40.29	− 0.78	− 21.88	38 8 1.82	+ 3 50.05	+ 43.0	11 52 17.63	−63.93	89 18 56.1	. .
	15	a^2 Can. Venat.		9	50 54.16	− 0.80	**− 21.92**	359 52 4.08	+ 4 19.23	− 0.1	12 50 31.45	. .	51 2 44.4	− 3.5
	16	Polaris, S. P.		9	17 11.01	+ 6.89	− 21.92	307 31 59.72	+ 3 42.70	− 1 10.6	1 16 55.98	. .	358 40 53.0	− 4.5
	17	η Bootis		9	49 28.28	− 0.77	− 21.92	19 50 1.70	+ 3 58.48	− 19.7	13 49 5.58	. .	71 0 41.1	− 1.0
S.	18	Comet 1882 II		9	9 34.27	− 0.77	− 22.56	40 10 14.32	+ 1 58.61	+ 47.0	11 9 10.94	. .	91 19 21.1	. .
21	19	Sun I, S.		9	54 8.47	− 0.77	− 22.56	38 32 8.25	+ 3 2.50	+ 44.2	11 53 45.14	+63.96	89 42 16.2	. .
	20	Sun II, N.		9	56 16.40	− 0.77	− 22.56	38 0 9.32	+ 3 8.25	+ 43.3	11 55 53.07	−63.97	89 10 22.1	. .
	21	a^2 Can. Venat.		8	50 54.83	− 0.85	**− 22.54**	359 52 10.58	+ 4 14.12	− 0.1	12 50 31.42	. .	51 2 45.8	− 2.4
	22	Polaris, S. P.		7	17 9.39	+ 9.55	− 22.56	307 32 10.00	+ 3 35.64	− 1 11.2	1 16 56.38	. .	358 40 55.6	− 2.3
	23	α Virginis		5	19 24.04	− 0.78	**− 22.59**	49 22 10.08	+ 3 14.50	+ 1 4.0	13 19 0.70	. .	100 32 49.8	− 2.9
	24	Mercury C		9	24 19.68	− 0.78	− 22.56	49 48 8.70	+ 3 26.37	+ 1 5.0	13 23 56.34	+ 0.05	100 59 1.3	. .
	25	ε Bootis		9	40 14.89	− 0.81	**− 22.56**	11 16 8.60	+ 2 56.35	+ 10.9	14 39 51.52	. .	62 25 37.1	− 1.9
23, W.	26	α Hydræ		9	22 14.44	− 0.76	**− 24.29**	46 58 3.02	+ 3 33.52	+ 1 1.3	9 21 49.40	. .	98 8 59.0	− 2.1
	27	ε Leonis		9	39 36.22	− 0.64	**− 24.25**	14 30 2.50	+ 4 35.09	+ 14.9	9 39 11.30	. .	65 41 13.7	− 2.2
	28	μ Leonis		9	46 30.16	− 0.63	**− 24.30**	12 16 5.18	+ 3 53.04	+ 12.5	9 46 5.25	. .	63 26 31.9	− 2.0
	29	α Leonis		9	2 32.22	− 0.68	**− 24.26**	26 18 3.08	+ 2 43.39	+ 28.2	10 2 7.26	. .	77 27 35.9	− 2.2
	30	γ^1 Leonis		6	13 54.93	− 0.65	**− 24.28**	18 23 57.02	+ 3 20.27	+ 19.0	10 13 30.00	. .	69 33 57.5	− 1.9
	31	γ^2 Leonis		5	13 55.14	− 0.65	− 24.28	18 23 57.02	+ 3 21.66	+ 19.0	10 13 30.21	− 2.04	69 33 58.9	−15.8
28, W.	32	α Hydræ		9	22 14.62	− 1.03	**− 24.09**	46 58 2.55	+ 3 30.95	+ 1 2.5	9 21 49.53	. .	98 8 57.2	− 3.9
	33	θ Ursæ Majoris		9	25 24.61	− 0.47	− 24.05	346 38 4.15	+ 3 20.36	− 13.8	9 25 0.09	. .	37 47 31.9	− 2.1
	34	ε Leonis		9	39 36.23	− 0.77	**− 24.03**	14 30 4.90	+ 4 32.21	+ 15.1	9 39 11.41	. .	65 41 13.4	− 3.3
	35	α Bootis		9	2 32.24	− 0.86	**− 24.01**	26 15 59.48	+ 4 46.66	+ 28.7	10 2 7.32	. .	77 27 36.0	− 2.6
	36	γ^1 Leonis		9	13 54.97	− 0.80	**− 24.09**	18 23 59.30	+ 3 17.46	+ 19.3	10 13 30.11	. .	69 33 57.3	− 2.9
29	37	Sun I, N.		9	22 58.22	− 0.98	− 24.07	41 6 4.00	+ 4 9.57	+ 49.8	12 22 33.17	+64.14	92 17 24.6	. .
	38	Sun II, S.		7	25 6.51	− 0.98	− 24.07	41 38 10.08	+ 4 1.82	+ 50.8	12 24 41.46	−64.15	92 49 23.9	. .
	39	a^2 Can. Venat.		5	50 56.20	− 0.64	**− 24.13**	359 52 1.60	+ 4 25.13	− 0.1	12 50 31.49	. .	51 2 47.8	− 2.4
	40	Polaris, S. P.		6	17 36.43	−13.45	− 24.07	307 32 4.25	+ 3 45.76	− 1 13.8	1 16 58.91	. .	358 40 57.4	− 3.4
	41	α Virginis		9	19 25.81	− 1.05	**− 24.10**	49 22 1.92	+ 3 19.93	+ 1 6.3	13 19 0.69	. .	100 32 49.3	− 3.0
	42	Mercury I, N.		9	56 25.52	− 1.09	− 24.07	53 46 2.45	+ 4 41.16	+ 1 17.6	13 56 0.36	+ 0.23	104 58 22.4	. .
	43	α Bootis		9	10 43.14	− 0.80	**− 24.07**	19 2 0.15	+ 3 33.42	+ 19.6	14 10 18.27	. .	70 12 14.4	− 0.9
	44	ρ Bootis		2	27 10.68	− 0.71	**− 24.05**	7 56 0.25	+ 4 6.44	+ 8.0	14 26 45.90	. .	59 6 35.9	− 1.9
	45	ε Bootis		9	40 16.16	− 0.74	**− 24.00**	11 16 3.30	+ 3 2.16	+ 11.3	14 39 51.34	. .	62 25 38.0	− 2.3
	46	a^2 Libræ		9	44 48.62	− 1.09	**− 24.09**	54 22 2.22	+ 3 24.49	+ 1 19.0	14 44 23.45	. .	105 33 6.9	− 2.3
	47	Venus I, N.		9	19 3.08	− 1.16	− 24.08	60 48 0.15	+ 4 11.44	+ 1 41.1	15 18 37.84	+ 0.95	112 0 13.9	. .
	48	Lalande 35598		9	58 2.33	− 0.89	− 24.17	37 12 0.42	+ 1 35.59	+ 43.5	18 57 37.27	− 3.23	88 20 40.7	+18.5
	49	d Sagittarii		9	11 12.71	− 1.08	**− 24.03**	57 58 0.00	+ 3 32.33	+ 1 31.6	19 10 47.46	. .	109 9 25.1	− 4.1
	50	ρ^1 Sagittarii		9	15 18.72	− 1.07	− 24.17	56 52 3.00	+ 3 56.37	+ 1 27.9	19 14 53.48	− 3.76	108 3 48.5	+13.2

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
5	30.08	76.8	78.9			13	− 5.4	+ 15 57.0	.	+ 15 51.6
10	30.08	79.8	81.7		ZENITH-POINT CORR.	14	− 5.4	− 15 57.1	.	− 16 2.5
14	30.09	82.6	84.4			19	− 5.5	− 15 57.0	.	− 16 2.5
16	30.07	83.3	85.3		″	20	− 5.4	+ 15 57.0	.	+ 15 51.6
18	30.17	76.4	76.0	21, 39. One bisection.	1 to 3 + 51.21	24	− 6.1	. .	+ 0.4	− 5.7
20	30.17	78.0	78.8	22. Three bisections.	5 to 17 + 50.74	37	− 5.8	+ 15 59.6	.	+ 15 53.8
24	30.13	81.4	82.8	12, 18, 47. Four bisections.	18 to 25 + 51.75	38	− 5.9	− 15 59.6	.	− 16 5.5
26	30.20	61.7	62.8		26 to 31 + 55.27	42	− 7.3	+ 3.4	.	− 3.9
29	30.21	62.9	64.6		32 to 47 + 54.73	47	− 11.8	+ 13.1	.	+ 1.3
33	30.26	54.0	54.7		48 to 50 + 55.24					
38	30.25	62.2	65.0							
47	30.23	67.6	68.8							
48	30.24	63.6	62.4							

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Sept. 29, W.	1	δ Aquilæ		9	20 1.31	− 0.88	**− 24.16**	35 56 2.52	+ 3 40.17	+ 41.7	19 19 36.26	. .	87 6 45.6	− 3.7
	2	Weisse 728		8	30 32.74	− 0.78	− 24.17	23 28 2.72	+ 3 36.67	+ 25.0	19 30 7.79	− 3.14	74 38 25.6	+25.0
	3	B. A. C. 6737		9	33 57.37	− 0.12	− 24.17	335 40 9.32	+ 3 3.64	− 25.9	19 33 33.08	− 1.69	26 49 8.3	+32.4
	4	Rümker 7771		3	34 14.33	− 0.12	− 24.17	335 40 9.32	− 0 19.78	− 26.0	19 33 50.04	− 1.68	26 35 44.7	+32.4
	5	17¹ Cygni		6	42 24.55	− 0.62	− 24.17	5 22 2.55	+ 3 44.87	+ 5.5	19 41 59.76	− 2.87	56 32 14.1	+29.8
	6	17² Cygni		5	42 26.47	− 0.62	− 24.17	5 22 2.55	+ 3 36.57	+ 5.5	19 42 1.68	− 2.87	56 32 5.8	+29.8
	7	B. A. C. 6816		9	48 1.03	− 1.25	− 24.17	72 8 6.45	+ 3 33.81	+ 2 57.1	19 47 35.61	− 4.31	123 20 58.6	+10.6
	8	B. A. C. 6843		7	52 33.23	− 1.28	− 24.17	74 22 9.20	+ 3 30.69	+ 3 23.3	19 52 7.78	− 4.40	125 35 24.4	+10.3
	9	B. A. C. 6886		9	58 30.19	− 1.25	− 24.17	72 6 . .	. . .	. .	19 58 4.77	− 4.34	123 20 . .	. .
	10	α² Capricorni		9	11 59.56	− 1.02	**− 24.23**	51 44 2.30	+ 2 35.25	+ 1 13.0	20 11 34.37	. .	102 54 11.8	− 3.2
	11	κ Cephei		4	13 15.98	+ 0.74	− 24.17	321 30 4.75	+ 2 25.73	− 45.7	20 12 52.55	. .	12 38 6.0	− 0.9
	12	γ Cygni		5	18 27.57	− 0.54	**− 24.24**	358 58 . .	. . .	. .	20 18 2.86	. .	50 7 . .	. .
	13	ε Delphini		9	28 3.13	− 0.81	**− 24.19**	27 56 0.30	+ 2 25.70	+ 30.6	20 27 38.15	. .	79 5 17.8	− 3.7
	14	Groom. 3241		5	30 57.71	+ 0.27	− 24.17	326 42 4.20	+ 3 42.15	− 37.8	20 30 33.81	. .	17 51 29.8	− 1.4
	15	α Cygni (R)		.	. . . .	. .	. .	185 54 1.68	+ 4 22.03	+ 6.0	. . . .	. .	45 7 51.5	− 1.7
	16	α Cygni		.	. . . .	. .	. .	353 58 7.50	+ 3 28.37	− 6.0	20 37.5	. .	45 7 51.1	− 2.3
	17	D. M. +80°, 281, S. P.		8	50 43.47	− 2.85	− 24.17	299 38 3.70	+ 3 46.66	− 1 40.9	8 50 16.45	− 3.36	350 46 30.7	+31.3
	18	B. A. C. 7345		9	3 0.56	− 0.45	− 24.17	351 40 8.52	+ 2 34.60	− 8.4	21 2 35.94	− 3.49	42 48 55.9	+34.3
	19	τ Cygni		9	10 33.44	− 0.57	− 24.17	1 18 4.92	+ 2 24.65	+ 1.4	21 10 8.70	− 3.62	52 26 52.2	+33.5
	20	ζ Capricorni		9	20 25.27	− 1.12	− 24.17	61 44 2.68	+ 2 42.61	+ 1 47.3	21 19 59.98	− 4.29	112 54 53.8	+20.8
	21	ε Pegasi (R)		.	. . . .	. .	. .	150 24 4.58	+ 3 20.64	− 32.8	. . . .	. .	80 39 28.8	+ 2.8
	22	ε Pegasi		.	. . . .	. .	. .	29 30 7.68	+ 2 22.02	+ 32.8	21 38.5	. .	80 39 23.7	− 2.3
	23	Groom. 3756		9	17 24.99	+ 0.58	− 24.17	322 56 0.98	+ 4 5.08	− 43.6	22 17 1.40	− 6.27	14 5 43.7	+32.4
	24	π Aquarii		3	19 44.37	− 0.90	**− 24.24**	38 2 9.15	+ 3 27.41	+ 45.4	22 19 19.30	. .	89 12 43.2	− 3.4
	25	9 Draconis, S. P.		9	25 27.53	− 2.14	− 24.17	295 12 6.42	+ 2 18.52	− 2 2.3	10 25 1.22	. .	346 18 43.8	− 0.2
	26	ζ Pegasi		9	36 3.86	− 0.82	**− 24.20**	28 36 4.80	+ 3 33.04	+ 31.7	22 35 38.86	. .	79 46 30.7	− 2.4
	27	λ Aquarii		9	46 56.89	− 0.98	**− 24.13**	47 2 . .	. . .	. .	22 46 31.73	. .	98 12 . .	. .
	28	74 Aquarii		8	47 45.44	− 1.01	− 24.18	51 2 8.25	+ 4 27.46	+ 1 11.8	22 47 20.25	− 4.29	102 14 8.7	+27.0
	29	Weisse 1047		9	52 24.88	− 1.01	− 24.18	50 34 4.18	+ 3 39.99	+ 1 10.6	22 51 59.69	− 4.29	101 45 16.0	+27.2
	30	Weisse 1079		9	53 52.24	− 1.03	− 24.18	52 30 7.12	+ 3 59.27	+ 1 15.7	22 53 27.03	− 4.31	103 41 43.3	+26.9
	31	Weisse 1204		9	58 48.20	− 1.02	− 24.18	51 38 5.50	+ 2 43.08	+ 1 13.3	22 58 23.00	− 4.30	102 48 23.1	+27.2
	32	Weisse 1261		9	1 43.08	− 1.01	− 24.18	51 14 4.68	+ 4 31.89	+ 1 12.4	23 1 17.89	− 4.31	102 26 10.2	+27.3
	33	Weisse 49		9	5 49.13	− 1.00	− 24.18	49 58 6.15	+ 2 49.96	+ 1 9.1	23 5 23.95	− 4.30	101 8 26.4	+27.5
	34	ψ Aquarii		9	10 12.02	− 0.99	− 24.18	48 32 6.10	+ 3 47.44	+ 1 5.8	23 9 46.85	− 4.30	99 43 20.5	+27.8
	35	Weisse 265		9	15 13.71	− 1.00	− 24.18	49 58 5.95	+ 4 35.84	+ 1 9.3	23 14 48.53	− 4.31	101 10 12.3	+27.6
	36	Weisse 377		9	20 58.38	− 1.00	− 24.18	49 30 7.22	+ 2 53.49	+ 1 8.1	23 20 33.20	− 4.31	100 40 30.0	+27.8
	37	Weisse 497		9	26 48.44	− 1.00	− 24.18	50 28 5.55	+ 2 54.03	+ 1 10.5	23 26 23.26	− 4.32	101 28 31.3	+27.7
	38	Weisse 586		9	30 24.27	− 0.98	− 24.18	48 14 6.12	+ 3 1.68	+ 1 5.2	23 29 59.11	− 4.31	99 24 34.2	+28.0
	39	ι Piscium		9	34 22.30	− 0.86	**− 24.19**	33 50 10.22	+ 3 5.51	+ 39.1	23 33 57.26	. .	85 0 16.0	− 2.5
	40	Groom. 4163		9	49 38.98	+ 0.38	− 24.18	325 6 5.28	+ 2 33.61	− 40.6	23 49 15.18	. .	16 14 19.5	− 1.3
	41	ω Piscium		9	53 44.52	− 0.85	**− 24.12**	32 36 5.82	+ 3 48.62	+ 37.4	23 53 19.49	. .	83 46 53.0	− 2.2
October 2, S.	42	ε Leonis		9	39 36.31	− 0.76	**− 24.03**	14 30 13.68	+ 4 26.04	+ 15.0	9 39 11.52	. .	65 41 15.9	− 1.4
	43	α Leonis		9	2 32.31	− 0.80	**− 24.05**	26 18 6.95	+ 2 40.10	+ 28.4	10 2 7.47	. .	77 27 36.6	− 2.4
	44	γ¹ Leonis		9	13 54.96	− 0.77	**− 24.03**	18 24 5.78	+ 3 13.03	+ 19.1	10 13 30.14	. .	69 33 59.1	− 1.7
3	45	Sun I, S.		9	37 27.68	− 0.88	− 24.12	43 12 7.28	+ 3 12.46	+ 53.0	12 37 2.68	+64.43	94 22 33.9	. .
	46	Sun II, N.		9	39 36.54	− 0.88	− 24.12	42 40 7.38	+ 3 12.73	+ 52.0	12 39 11.54	−64.43	93 50 33.3	. .
	47	Polaris, S. P.		3	17 31.83	− 4.18	− 24.15	307 30 . .	. . .	. .	1 17 3.50	. .	358 41 . .	. .
	48	η Bootis		9	49 30.42	− 0.78	**− 24.11**	19 50 7.52	+ 3 53.67	+ 20.4	13 49 5.48	. .	71 0 42.8	− 1.0
	49	α Bootis		9	10 43.17	− 0.78	**− 24.15**	19 2 8.40	+ 3 26.16	+ 19.5	14 10 18.22	. .	70 12 15.3	− 0.7
	50	β Bootis		9	57 55.80	− 0.69	**− 24.30**	357 58 2.90	+ 4 11.29	− 1.9	14 57 30.91	. .	49 8 33.5	− 1.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
17	30.25	60.2	58.3	ZENITH-POINT CORR.	45	− 6.1	− 16 0.2	. .	− 16 6.3
27	30.24	58.2	56.3	″	46	− 6.0	+ 16 0.3	. .	+ 15 54.3
40	30.24	56.3	54.2						
42	30.26	59.6	60.8	3, 4. One bisection. 1 to 41 + 55.24					
46	30.25	67.2	70.7	42 to 50 + 54.42					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
October 3, S.	1	β Libræ		9	11 6.94	− 0.90	**− 24.26**	47 46 5.25	+ 3 21.85	+ 1 1.9	15 10 41.83	. .	98 56 50.2	− 1.5
	2	α Cor. Bor.		9	30 7.86	− 0.75	**− 24.14**	11 42 4.65	+ 4 31.42	+ 11.7	15 29 42.89	. .	62 53 9.0	− 1.6
	3	Venus I, N.		9	34 32.94	− 0.98	− 24.22	62 2 5.52	+ 3 36.06	+ 1 45.6	15 34 7.74	+ 1.00	113 13 48.4	. .
	4	Lalande 35150		9	47 5.29	− 0.78	− 24.36	25 0 5.58	+ 3 11.72	+ 26.6	18 46 40.15	− 2.84	76 10 5.1	+21.5
	5	Lalande 35560		9	57 20.64	− 0.84	− 24.36	37 12 6.45	+ 4 19.04	+ 43.2	18 56 55.44	− 3.17	88 23 29.9	+18.6
	6	ζ Aquilæ		9	0 27.22	− 0.78	**− 24.31**	25 8 4.98	+ 3 22.14	+ 26.7	19 0 2.08	. .	76 18 15.0	− 2.2
	7	d Sagittarii		9	11 12.84	− 0.94	**− 24.38**	57 58 3.88	+ 3 30.97	+ 1 30.9	19 10 47.54	. .	109 9 26.9	− 2.3
	8	ρ^2 Sagittarii		9	15 26.87	− 0.94	− 24.36	57 20 7.88	+ 3 19.89	+ 1 28.7	19 15 1.57	− 3.71	108 31 17.7	+13.1
	9	Weisse 728		9	30 32.81	− 0.78	− 24.36	23 28 3.90	+ 3 35.75	+ 24.8	19 30 7.67	− 3.08	74 38 25.6	+25.2
	10	B. A. C. 6728		9	33 14.69	− 0.66	− 24.36	355 24 4.50	+ 2 33.16	− 4.5	19 32 49.67	− 2.43	46 32 54.4	+31.3
	11	λ Ursæ Minoris		4	41 49.05	+ 4.58	− 24.36	309 54 4.12	+ 3 15.29	− 1 7.9	19 41 29.27	. .	1 2 32.7	− 1.3
	12	B. A. C. 6830		9	49 6.06	− 0.64	− 24.36	351 12 9.05	+ 3 25.60	− 8.8	19 48 41.06	− 2.48	42 21 47.0	+32.7
	13	Weisse (2) 1739		9	54 25.21	− 0.72	− 24.35	8 10 8.75	+ 2 57.61	+ 8.2	19 54 0.14	− 2.96	59 19 35.8	+30.4
	14	B. A. C. 6886		9	58 30.13	− 1.04	− 24.35	72 6 6.02	+ 4 21.30	+ 2 55.4	19 58 4.74	− 4.28	123 19 43.9	+11.4
	15	B. A. C. 6922		9	3 56.52	− 1.07	− 24.35	75 10 5.95	+ 3 35.14	+ 3 32.8	20 3 31.10	− 4.40	126 23 35.1	+10.8
	16	α^2 Capricorni		9	11 59.51	− 0.90	**− 24.36**	51 44 4.90	+ 2 33.72	+ 12.4	20 11 34.26	. .	102 54 12.2	− 2.9
	17	ε Cygni (R)		.	. . . .	. .	. .	174 34 7.05	+ 4 37.33	− 5.4	. . . .	. .	56 27 42.2	+33.0
	18	ε Cygni		.	. . . .	. .	. .	5 18 7.92	+ 3 5.82	+ 5.4	20 41.5	. .	56 27 40.3	+33.0
	19	Cygni		9	53 14.86	− 0.67	**− 24.37**	358 8 9.28	+ 2 7.71	− 1.8	20 52 49.84	. .	49 16 36.4	− 1.3
	20	ζ Cygni		9	8 23.53	− 0.72	**− 24.38**	9 6 5.05	+ 2 12.19	+ 9.2	21 7 58.46	. .	60 14 47.6	− 3.1
	21	α Cephei (R)		.	. . . .	. .	. .	203 8 6.88	+ 3 34.67	+ 24.6	. . . .	. .	27 54 15.0	− 0.2
	22	α Cephei		.	. . . .	. .	. .	336 46 6.12	+ 2 9.28	− 24.6	21 15.8	. .	27 54 12.0	− 3.2
	23	d Ursæ Maj., S. P.		9	24 29.22	− 0.92	− 24.35	289 14 3.25	+ 2 39.85	− 2 42.4	9 24 3.95	. .	340 20 21.9	+ 0.2
	24	11 Cephei		9	40 40.57	− 0.44	− 24.35	328 4 3.45	+ 3 27.98	− 35.7	21 40 15.78	. .	19 13 16.9	− 2.1
	25	μ Capricorni		9	47 21.20	− 0.91	**− 24.39**	52 56 4.55	+ 2 14.37	+ 1 16.0	21 46 55.94	. .	104 5 56.1	− 3.2
	26	α Gruis		9	1 17.93	− 1.20	− 24.34	86 10 10.92	+ 3 8.26	+ 12 2.6	22 0 52.39	. .	137 31 43.0	+ 5.8
	27	ζ Pegasi		9	36 3.94	− 0.80	**− 24.32**	28 36 4.68	+ 3 32.81	+ 31.4	22 35 38.80	. .	79 46 30.1	− 2.7
	28	Weisse 966		9	48 23.08	− 0.90	− 24.34	51 38 8.18	+ 2 47.79	+ 1 12.7	22 47 57.84	− 4.29	102 48 29.9	+26.8
	29	Weisse 1047		9	52 24.86	− 0.90	− 24.34	50 34 3.58	+ 3 39.96	+ 1 10.1	22 51 59.62	− 4.29	101 45 14.8	+27.1
	30	Weisse 1156		9	56 50.88	− 0.90	− 24.34	50 42 10.10	+ 3 46.97	+ 1 10.5	22 56 25.64	− 4.29	101 53 28.8	+27.2
	31	Weisse 49		9	5 49.14	− 0.90	− 24.34	49 58 10.55	+ 2 43.34	+ 1 8.6	23 5 23.90	− 4.30	101 8 23.7	+27.4
	32	Weisse 123		9	9 0.62	− 0.90	− 24.34	50 8 6.42	+ 3 41.44	+ 1 9.1	23 8 35.38	− 4.30	101 19 18.2	+27.5
	33	Weisse 228		9	13 22.19	− 0.90	− 24.34	51 38 8.08	+ 2 42.32	+ 1 12.8	23 12 56.95	− 4.31	102 48 24.4	+27.3
	34	Weisse 309		9	17 22.81	− 0.90	− 24.34	50 14 4.50	+ 3 6.11	+ 1 9.3	23 16 57.57	− 4.31	101 24 41.1	+27.5
	35	Weisse 377		9	20 58.43	− 0.89	− 24.34	49 30 8.18	+ 2 51.31	+ 1 7.6	23 20 33.20	− 4.32	100 40 28.3	+27.7
	36	Weisse 497		9	26 48.50	− 0.90	− 24.34	50 28 6.10	+ 2 52.57	+ 1 9.9	23 26 23.26	− 4.32	101 38 29.8	+27.6
	37	Weisse 586		9	30 24.34	− 0.89	− 24.34	48 14 9.85	+ 2 57.24	+ 1 4.7	23 29 59.11	− 4.32	99 24 33.0	+27.9
	38	Weisse 629		9	32 36.36	− 0.89	− 24.34	48 6 8.95	+ 2 43.92	+ 1 4.4	23 32 11.13	− 4.32	99 16 18.5	+27.9
	39	106 Aquarii		9	38 34.43	− 0.94	− 24.34	57 44 5.42	+ 3 26.67	+ 1 31.4	23 38 9.15	− 4.34	108 55 24.7	+26.7
	40	δ Sculptoris		9	43 16.39	− 1.00	− 24.34	67 34 8.12	+ 3 41.40	+ 2 19.3	23 42 51.05	− 4.39	118 46 30.0	+25.4
	41	ω Piscium		9	53 44.66	− 0.82	**− 24.28**	32 36 4.68	+ 3 50.11	+ 37.0	23 53 19.51	. .	83 46 53.0	− 2.0
4, W.	42	Lalande 35560		2	57 20.78	− 0.94	− 24.56	37 12 5.42	+ 4 20.00	+ 43.3	18 56 55.43	− 3.16	88 23 29.9	+18.6
	43	Lalande 35598	5.5	5	58 2.66	− 0.94	− 24.56	37 12 5.42	+ 1 31.83	+ 43.2	18 57 37.16	− 3.16	88 20 41.6	+18.6
	44	d Sagittarii		9	11 13.20	− 1.06	**− 24.63**	57 58 4.25	+ 3 30.55	+ 1 31.0	19 10 47.58	. .	109 9 27.0	− 2.3
	45	Piazzi VII, 67, S.P.		3	19 6.97	− 1.08	− 24.56	287 36 3.10	+ 2 18.81	− 2 57.2	7 18 41.33	. .	338 41 45.9	− 3.7
	46	δ Aquilæ		9	20 1.69	− 0.94	**− 24.56**	35 56 5.50	+ 3 38.18	+ 41.4	19 19 36.19	. .	87 6 46.3	− 3.0
	47	Lalande 37079, o	7	9	30 26.13	− 1.06	− 24.57	57 48 6.65	+ 6 23.28	+ 1 30.7	19 30 0.50	− 3.78	109 2 21.8	+14.1
	48	Anonymous	7	4	30 50.84	− 1.06	− 24.57	57 48 6.65	+ 3 32.05	+ 1 30.5	19 30 24.91	− 3.78	108 59 30.4	+14.2
	49	B. A. C. 6720		.	. . . .	. .	. .	355 8 5.50	+ 3 53.01	− 4.8	19 31.1	. .	46 18 14.9	+31.3
	50	λ Ursæ Minoris		4	41 42.50	+ 6.01	− 24.57	309 54 1.42	+ 3 17.83	− 1 8.0	19 41 23.94	. .	1 2 32.4	− 1.5

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
3	30.23	72.8	72.5
8	30.22	67.2	65.5
18	30.23	65.0	63.2
26	30.23	62.8	60.4
41	30.24	60.8	58.3
43	30.27	66.7	66.3

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

		″
16, 48, 49.	One bisection.	1 to 3 + 54.42
11, 26.	Three bisections.	4 to 41 + 54.43
3, 7.	Four bisections.	42 to 50 + 54.54

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
3	− 12.5	+ 13.7	.	+ 1.2

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
October 4, W.	1	17¹ Cygni . . .	.	6	42 24.98	— 0.80	— 24.57	5 22 5.02	+ 3 41.30	+ 5.4	19 41 59.61	— 2.77	56 32 12.9	+30.3
	2	17² Cygni . . .	.	5	42 27.03	— 0.80	— 24.57	5 22 5.02	+ 3 33.18	+ 5.4	19 42 1.66	— 2.77	56 32 4.8	+30.3
	3	B. A. C. 6867 .	.	9	54 7.74	— 0.63	— 24.57	340 18 7.22	+ 3 24.72	— 20.4	19 53 42.54	— 2.10	31 27 32.7	+33.9
	4	3 Ursæ Maj., S. P. .	.	5	1 33.59	— 1.08	— 24.57	287 42 7.35	+ 3 8.41	— 2 56.6	8 1 7.94	. .	338 48 40.4	— 0.7
	5	31 Cygni . . .	.	6	10 23.03	— 0.73	— 24.57	352 28 6.78	+ 2 1.40	— 7.5	20 9 57.73	— 2.75	43 36 21.9	+33.7
	6	Piazzi 63 . .	.	5	10 24.21	— 0.73	— 24.57	352 28 6.78	+ 3 48.64	— 7.5	20 9 58.91	— 2.75	43 38 9.1	+33.7
	7	α² Capricorni . .	.	3	11 59.78	— 1.02	**— 24.53**	51 44 7.60	+ 2 30.07	+ 1 12.5	20 11 34.19	. .	102 54 11.4	— 3.7
	8	ε Delphini . .	.	9	28 3.50	— 0.90	**— 24.55**	27 56 5.32	+ 2 21.11	+ 30.4	20 27 38.03	. .	79 5 18.0	— 3.4
	9	α Cygni (R) . .	.	.	. . . .	. .	. .	185 54 4.90	+ 4 18.96	+ 6.0	. . . .	. .	45 7 51.3	— 1.3
	10	α Cygni . . .	.	.	. . . .	. .	. .	353 58 9.85	+ 3 25.24	— 6.0	20 37.5	. .	45 7 50.3	— 2.3
	11	B. A. C. 7256 (R)	.	.	. . . .	. .	. .	168 40 12.78	+ 3 25.48	— 11.4	. . . .	. .	62 22 54.3	+32.3
	12	B. A. C. 7256 .	.	.	. . . .	. .	. .	11 12 8.65	+ 4 10.54	+ 11.4	20 49.6	. .	62 22 51.8	+32.3
	13	τ Cygni . . .	.	9	10 33.80	— 0.78	— 24.58	1 18 7.30	+ 2 20.88	+ 1.3	21 10 8.44	— 3.54	52 26 50.7	+34.4
	14	ζ Capricorni . .	.	9	20 25.62	— 1.08	— 24.58	61 44 6.38	+ 2 39.77	+ 1 46.7	21 19 59.96	— 4.24	112 54 54.1	+20.6
	15	θ Aquarii . . .	.	9	11 6.14	— 1.00	**— 24.57**	47 12 7.78	+ 2 12.26	+ 1 2.3	22 10 40.55	. .	98 21 43.5	— 3.1
	16	Groom. 3756 .	.	9	17 25.32	— 0.32	— 24.59	322 56 3.10	+ 4 0.18	— 43.4	22 17 0.41	— 6.04	14 5 41.1	+34.1
	17	π Aquarii . . .	.	3	19 44.81	— 0.95	**— 24.67**	38 2 8.88	+ 3 28.57	+ 45.2	22 19 19.27	. .	89 12 43.8	— 2.8
	18	η Aquarii . . .	.	9	29 47.30	— 0.95	**— 24.61**	39 32 7.60	+ 3 43.47	+ 47.7	22 29 21.75	. .	90 43 0.0	— 2.5
	19	ζ Pegasi . . .	.	9	36 4.28	— 0.90	**— 24.56**	28 36 7.05	+ 3 29.81	+ 31.5	22 35 38.78	. .	79 46 29.6	— 3.1
	20	74 Aquarii . . .	.	9	47 45.77	— 1.02	— 24.60	51 2 8.90	+ 4 25.64	+ 1 11.4	22 47 20.15	— 4.28	102 14 7.1	+26.9
	21	Weisse 1047 . .	.	9	52 25.23	— 1.01	— 24.60	50 34 5.88	+ 3 37.90	+ 1 10.6	22 51 59.62	— 4.29	101 45 15.6	+27.1
	22	Weisse 1079 . .	.	9	53 52.64	— 1.03	— 24.60	52 30 12.42	+ 3 52.63	+ 1 15.3	22 53 27.01	— 4.30	103 41 41.5	+26.8
	23	Weisse 1204 . .	.	9	58 48.63	— 1.02	— 24.60	51 38 8.80	+ 2 40.26	+ 1 13.0	22 58 23.01	— 4.30	102 48 23.3	+27.0
	24	Weisse 1261 . .	.	9	1 43.54	— 1.02	— 24.60	51 14 6.32	+ 4 30.44	+ 1 12.0	23 1 17.92	— 4.30	102 26 10.0	+27.1
	25	Weisse 49 . .	.	9	5 49.54	— 1.01	— 24.60	49 58 5.30	+ 2 49.96	+ 1 8.8	23 5 23.93	— 4.30	101 8 25.3	+27.4
	26	ψ Aquarii . . .	.	9	10 12.43	— 1.00	— 24.60	48 32 9.15	+ 3 43.54	+ 1 5.5	23 9 46.83	— 4.30	99 43 19.4	+27.7
	27	Weisse 265 . .	.	9	15 14.12	— 1.01	— 24.60	49 58 7.12	+ 4 34.56	+ 1 8.9	23 14 48.51	— 4.31	101 10 11.8	+27.5
	28	Weisse 377 . .	.	9	20 58.86	— 1.01	— 24.60	49 30 8.82	+ 2 51.37	+ 1 7.7	23 20 33.25	— 4.32	100 40 29.1	+27.7
	29	Weisse 497 . .	.	9	26 48.86	— 1.01	— 24.60	50 28 6.98	+ 2 52.25	+ 1 10.1	23 26 23.25	— 4.32	101 38 30.5	+27.6
	30	Weisse 586 . .	.	9	30 24.73	— 1.00	— 24.61	48 14 5.60	+ 3 2.24	+ 1 4.8	23 29 59.12	— 4.32	99 24 33.8	+27.9
	31	ι Piscium . . .	.	9	34 22.74	— 0.93	**— 24.57**	33 50 10.12	+ 3 4.43	+ 38.8	23 33 57.20	. .	85 0 14.6	— 3.8
5, E.	32	Weisse (2) 1528 .	.	9	51 22.20	— 0.92	— 24.80	20 52 7.80	+ 3 12.52	+ 21.7	18 50 56.48	— 2.73	72 2 3.2	+22.9
	33	B. A. C. 6522 .	.	5	58 50.32	— 0.72	— 24.80	343 20 . .	. . . .	. .	18 58 24.80	— 1.39	34 31 . .	. .
	34	ζ Aquilæ . . .	.	9	0 27.79	— 0.93	**— 24.77**	25 8 15.58	+ 3 10.19	+ 26.7	19 0 2.06	. .	76 18 13.7	— 3.5
	35	d Sagittarii . .	.	9	11 13.37	— 1.10	**— 24.78**	57 58 4.50	+ 3 28.61	+ 1 30.8	19 10 47.47	. .	109 9 25.1	— 4.2
	36	Lal. (F) 3268 .	.	9	30 30.12	+ 0.09	— 24.80	315 36 6.98	+ 4 3.15	— 55.5	19 30 5.41	+ 4.82	6 45 35.8	+32.1
	37	Anonymous . .	.	9	36 52.06	— 1.02	— 24.80	44 4 4.10	+ 3 15.51	+ 55.2	19 36 26.24	— 3.50	95 14 36.0	+19.3
	38	λ Ursæ Minoris .	.	4	41 42.05	+ 5.26	— 24.80	309 54 . .	. . . .	. .	19 41 22.51	. .	1 3 . .	. .
	39	B. A. C. 6816 .	.	9	48 1.54	— 1.22	— 24.80	72 8 8.35	+ 3 34.53	+ 2 55.5	19 47 35.52	— 4.21	123 20 59.6	+10.5
	40	B. A. C. 6843 .	.	9	52 33.54	— 1.24	— 24.80	74 22 9.35	+ 3 34.38	+ 3 21.6	19 52 7.50	— 4.30	125 35 26.5	+10.1
	41	Anonymous . .	12.0	7	58 14.41	— 1.06	— 24.80	51 38 6.72	+ 2 22.70	+ 1 12.0	19 57 48.55	— 3.75	102 48 2.6	+18.3
	42	α² Capricorni . .	.	9	12 0.10	— 1.06	**— 24.82**	51 44 3.75	+ 2 34.21	+ 1 12.3	20 11 34.24	. .	102 54 11.5	— 3.7
	43	π Capricorni . .	.	9	21 3.87	— 1.10	**— 24.83**	57 24 8.80	+ 3 30.80	+ 1 29.2	20 20 37.97	. .	108 35 30.0	— 3.2
	44	ε Delphini . .	.	9	28 3.77	— 0.95	**— 24.78**	27 56 5.75	+ 2 21.34	+ 30.4	20 27 38.02	. .	79 5 18.7	— 2.6
	45	α Cygni (R) . .	.	.	. . . .	. .	. .	185 54 4.52	+ 4 19.62	+ 6.0	. . . .	. .	45 7 51.1	— 1.4
	46	α Cygni . . .	.	.	. . . .	. .	. .	353 58 6.85	+ 3 29.04	— 6.0	20 37.5	. .	45 7 51.1	— 1.4
	47	B. A. C 7256 (R)	.	.	. . . .	. .	. .	168 40 13.05	+ 3 26.14	— 11.4	. . . .	. .	62 22 53.4	+32.4
	48	B. A. C. 7256 .	.	.	. . . .	. .	. .	11 12 3.78	+ 4 13.18	+ 11.4	20 49.6	. .	62 22 49.6	+32.4
	49	λ Aquarii . . .	.	9	46 57.59	— 1.04	**— 24.80**	47 2 7.35	+ 2 24.67	+ 1 1.8	22 46 31.75	. .	98 11 55.0	— 3.1
	50	α Piscis Australis .	.	9	51 38.13	— 1.19	**— 24.80**	69 2 10.35	+ 3 25.24	+ 2 29.4	22 51 12.14	. .	120 14 26.2	— 1.1

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
13	30.28	63.0	61.4	ZENITH-POINT CORR.					
17	30.28	61.3	59.7	″					
31	30.28	59.4	58.3						
32	30.29	68.8	67.5	3, 6, 7. One bisection. 1 to 31 + 54.54					
41	30.29	67.5	65.5	32 to 50 + 54.43					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
October 5, E.	1	α Pegasi		9	59 23.02	− 0.93	**− 24.79**	24 16 6.90	+ 2 17.46	+ 26.0	22 58 57.29	. .	75 25 11.6	− 3.2
6, W.	2	51 Cephei, S. P.		5	45 45.86	− 3.56	− 25.37	306 4 3.68	+ 4 0.90	− 1 17.4	6 45 16.93	. .	357 13 8.4	− 1.6
	3	β Lyræ		9	46 11.89	− 0.84	**− 25.39**	5 36 7.42	+ 3 22.51	+ 5.6	18 45 45.68	. .	56 45 56.7	− 2.5
	4	Weisse (2) 1528		9	51 22.78	− 0.92	− 25.37	20 52 4.70	+ 3 15.76	+ 21.7	18 50 56.49	− 2.71	72 2 3.4	+22.9
	5	B. A. C. 6511		9	58 57.16	− 1.29	− 25.37	76 0 4.68	+ 3 35.69	+ 3 44.2	18 58 30.50	− 4.12	127 13 45.8	+ 5.1
	6	d Sagittarii		9	11 13.96	− 1.13	**− 25.36**	57 58 3.00	+ 3 31.99	+ 1 30.7	19 10 47.45	. .	109 9 26.9	− 2.4
	7	τ Draconis		9	18 14.51	− 0.42	− 25.38	325 42 4.05	+ 3 30.65	− 38.6	19 17 48.71	. .	16 51 17.3	− 1.1
	8	Lal. (F) 3268		5	30 30.70	+ 0.28	− 25.38	315 36 4.20	+ 4 6.00	− 55.5	19 30 5.60	+ 5.04	6 45 35.9	+32.1
	9	B. A. C. 6723		9	31 44.71	− 0.73	− 25.38	347 52 6.15	+ 2 8.78	− 12.2	19 31 18.60	− 2.04	39 0 23.9	+32.2
	10	Σ (P. M.) 2355¹		6	41 33.38	− 0.84	− 25.38	5 30 7.80	+ 3 3.26	+ 5.5	19 41 7.16	− 2.72	56 39 37.8	+30.3
	11	Σ (P. M.) 2355²		5	41 33.59	− 0.84	− 25.38	5 30 7.80	+ 3 5.90	+ 5.5	19 41 7.37	− 2.72	56 39 40.4	+30.3
	12	O. Arg. S. 20008		9	44 55.80	− 1.19	− 25.38	66 10 6.98	+ 3 57.07	+ 2 8.4	19 44 29.23	− 4.01	117 22 33.6	+12.2
	13	B. A. C. 6816		9	48 2.04	− 1.25	− 25.38	72 8 7.15	+ 3 36.02	+ 2 55.2	19 47 35.41	− 4.20	123 20 59.6	+10.4
	14	B. A. C. 6867		9	54 8.48	− 0.66	− 25.38	340 18 7.68	+ 3 24.11	− 20.3	19 53 42.44	− 2.02	31 27 32.7	+34.1
	15	Anonymous	12		. . . .	. .	. .	51 38 10.78	+ 2 23.40	+ 1 11.9	19 57.8	. .	102 48 7.3	+18.3
	16	31 Cygni		9	10 23.98	− 0.76	− 25.39	352 28 . .	. . . .	. . . .	20 9 57.83	− 2.70	43 36 . .	. .
	17	α² Capricorni		3	12 0.61	− 1.08	**− 25.33**	51 44 4.92	+ 2 33.51	+ 1 12.3	20 11 34.14	. .	102 54 11.9	− 3.3
	18	π Capricorni		9	21 4.46	− 1.12	**− 25.42**	57 24 4.70	+ 3 34.90	+ 1 29.2	20 20 37.95	. .	108 35 30.0	− 3.2
	19	ε Delphini		9	28 4.38	− 0.95	**− 25.41**	27 56 1.42	+ 2 25.29	+ 30.3	20 27 38.04	. .	79 5 18.2	− 3.1
	20	α Cygni (R)			. . . .	. .	. .	185 54 1.85	+ 4 22.85	+ 6.0	. . . .	. .	45 7 50.5	− 1.9
	21	α Cygni			. . . .	. .	. .	353 58 2.82	+ 3 31.85	− 6.0	20 37.5	. .	45 7 49.9	− 2.5
	22	B. A. C. 7256 (R)			. . . .	. .	. .	168 40 13.80	+ 3 25.16	− 11.4	. . . .	. .	62 22 53.6	+32.5
	23	B. A. C. 7256			. . . .	. .	. .	11 12 7.70	+ 4 10.13	+ 11.4	20 49.6	. .	62 22 50.4	+32.5
7, S.	24	1 Aquilæ		9	29 17.08	− 0.98	**− 25.78**	47 8 5.72	+ 3 49.72	+ 1 0.9	18 28 50.30	. .	98 19 17.5	− 1.4
	25	α Lyræ		9	33 25.10	− 0.76	**− 25.81**	0 10 7.78	+ 2 35.34	+ 0.2	18 32 58.54	. .	51 19 4.5	− 1.3
	26	51 Cephei, S. P.		4	45 46.28	− 3.06	− 25.81	306 4 5.28	+ 3 59.94	− 1 17.2	6 45 17.41	. .	357 13 9.2	− 0.8
	27	Lalande 35150		9	47 6.72	− 0.87	− 25.81	25 0 3.58	+ 3 14.41	+ 26.4	18 46 40.04	− 2.77	76 10 5.6	+21.3
	28	B. A. C. 6511		9	58 57.44	− 1.18	− 25.81	76 0 7.65	+ 3 35.33	+ 3 43.6	18 58 30.45	− 4.09	127 13 47.8	+ 5.0
	29	d Sagittarii		9	11 14.36	− 1.04	**− 25.87**	57 58 4.48	+ 3 31.33	+ 1 30.4	19 10 47.51	. .	109 9 27.4	− 1.9
	30	δ Aquilæ		9	20 2.82	− 0.92	**− 25.77**	35 56 5.75	+ 3 39.45	+ 41.1	19 19 36.08	. .	87 6 47.5	− 1.8
	31	Lal. (F) 3268		7	30 30.87	+ 0.16	− 25.82	315 36 6.25	+ 4 4.22	− 55.3	19 30 5.21	+ 5.25	6 45 36.4	+32.2
	32	Groom. 2884		9	32 36.48	− 0.75	− 25.82	358 8 6.38	+ 2 45.65	− 1.8	19 32 9.91	− 2.40	49 17 11.4	+31.0
	33	Σ (P. M.) 2355¹		6	41 33.73	− 0.79	− 25.82	5 30 6.82	+ 3 5.43	+ 5.5	19 41 7.12	− 2.70	56 39 38.9	+30.3
	34	Σ (P. M.) 2355²		5	41 34.05	− 0.79	− 25.82	5 30 6.82	+ 3 7.07	+ 5.5	19 41 7.44	− 2.70	56 39 40.6	+30.3
	35	χ Cygni		9	46 31.26	− 0.79	− 25.83	6 12 7.88	+ 3 53.77	+ 6.2	19 46 4.64	− 2.76	57 22 29.0	+30.4
	36	B. A. C 6867		7	54 8.74	− 0.63	− 25.83	340 18 7.55	+ 3 22.13	− 20.2	19 53 42.28	− 1.98	31 27 30.7	+34.2
	37	B. A. C. 6922		9	3 57.96	− 1.18	− 25.83	75 10 7.95	+ 3 35.65	+ 3 31.6	20 3 30.95	− 4.33	126 23 36.4	+10.5
	38	B. A. C. 7029 (R)			. . . .	. .	. .	172 52 5.50	+ 3 29.81	− 7.1	. . . .	. .	58 10 53.0	+32.1
	39	B. A. C. 7029			. . . .	. .	. .	7 2 9.12	+ 2 12.34	+ 7.1	20 19.2	. .	58 10 49.8	+32.1
	40	α Cygni (R)			. . . .	. .	. .	185 54 5.58	+ 4 18.81	+ 6.0	. . . .	. .	45 7 50.8	− 1.5
	41	α Cygni			. . . .	. .	. .	353 58 6.48	+ 3 27.33	− 6.0	20 37.5	. .	45 7 49.0	− 3.3
	42	α Gruis		9	1 19.52	− 1.31	− 25.87	86 10 8.72	+ 3 16.29	+11 59.6	22 0 52.34	. .	137 31 45.8	+ 7.9
	43	θ Aquarii		9	11 7.40	− 0.98	**− 25.88**	47 12 8.55	+ 2 12.46	+ 1 1.9	22 10 40.55	. .	98 21 44.1	− 2.6
	44	π Aquarii		9	19 45.91	− 0.93	**− 25.82**	38 2 7.90	+ 3 29.70	+ 44.9	22 19 19.10	. .	89 12 43.7	− 2.9
	45	η Aquarii		9	29 48.57	− 0.94	**− 25.92**	39 32 9.92	+ 3 41.34	+ 47.4	22 29 21.75	. .	90 42 59.9	− 2.6
	46	Weisse 966		9	48 24.84	− 1.00	− 25.89	51 38 7.88	+ 2 49.67	+ 1 12.5	22 47 57.95	− 4.27	102 48 31.3	+26.6
	47	Weisse 1047		9	52 26.46	− 0.99	− 25.89	50 34 6.65	+ 3 38.49	+ 1 9.8	22 51 59.58	− 4.27	101 45 16.1	+26.9
	48	Weisse 1156		9	56 52.45	− 0.99	− 25.89	50 42 8.00	+ 3 50.31	+ 1 10.2	22 56 25.57	− 4.28	101 53 29.7	+27.0
	49	Weisse 1232		9	0 14.72	− 0.99	− 25.89	49 52 10.60	+ 4 17.55	+ 1 8.2	22 59 47.84	− 4.28	101 3 57.6	+27.2
	50	Weisse 49		9	5 50.76	− 0.99	− 25.89	49 58 7.85	+ 2 46.75	+ 1 8.3	23 5 23.88	− 4.29	101 8 24.1	+27.3

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
1	30.31	63.0	61.2	ZENITH-POINT CORR.					
2	30.30	70.2	69.2	″					
23	30.29	65.9	64.1	8, 39. One bisection. 1 + 54.43					
25	30.16	69.0	68.4	42. Four bisections. 2 to 23 + 53.83					
38	30.15	66.5	65.0	24 to 50 + 55.32					
42	30.15	63.2	61.2						

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
October 7, S.	1	Weisse 123		9	8 2.33	− 0.99	− 25.89	50 8 7.40	+ 3 41.36	+ 1 8.8	23 7 35.45	− 4.30	101 19 18.8	+ 27.3
	2	Weisse 185		9	12 1.60	− 1.00	− 25.89	51 10 7.15	+ 3 17.37	+ 1 11.4	23 11 34.71	− 4.30	102 20 37.1	+ 27.1
	3	Weisse 265		9	15 15.44	− 0.99	− 25.90	49 58 11.48	+ 4 31.13	+ 1 8.5	23 14 48.55	− 4.30	101 10 12.3	+ 27.4
	4	Weisse 377		9	20 0.13	− 0.99	− 25.90	49 30 9.20	+ 2 51.22	+ 1 7.3	23 19 33.24	− 4.31	100 40 28.9	+ 27.5
	5	Weisse 427		9	23 25.57	− 0.98	− 25.90	48 44 4.48	+ 2 53.38	+ 1 5.5	23 22 58.69	− 4.31	99 54 24.6	+ 27.6
	6	Weisse 497		9	26 50.19	− 0.99	− 25.90	50 28 8.52	+ 2 52.15	+ 1 9.6	23 26 23.30	− 4.32	101 38 31.5	+ 27.4
	7	Weisse 571		9	29 52.47	− 0.99	− 25.90	50 0 12.62	+ 4 13.91	+ 1 8.6	23 29 25.58	− 4.32	101 11 56.3	+ 27.5
	8	Weisse 629		9	32 37.99	− 0.98	− 25.90	48 6 7.02	+ 2 47.25	+ 1 4.1	23 32 11.11	− 4.32	99 16 19.6	+ 27.8
	9	ω Piscium		9	53 46.38	− 0.90	**− 25.92**	32 36 6.18	+ 3 46.95	+ 36.9	23 53 19.57	. .	83 46 51.2	− 3.7
8, W.	10	β Leonis		9	43 32.08	− 0.95	**− 26.84**	23 36 8.82	+ 3 25.84	+ 24.5	11 43 4.25	. .	74 46 20.4	− 1.2
	11	γ Ursæ Majoris		9	48 5.81	− 0.78	− 26.88	344 30 9.78	+ 3 2.43	− 15.5	11 47 38.15	. .	35 39 17.9	− 1.2
	12	o Virginis		3	59 41.68	− 0.98	**− 26.94**	29 26 8.58	+ 3 52.65	+ 31.6	11 59 13.81	. .	80 36 54.0	− 1.7
	13	a^2 Can. Venat.		9	50 59.23	− 0.86	**− 26.90**	359 52 5.58	+ 4 24.66	− 0.1	12 50 31.46	. .	51 2 51.3	− 1.6
9	14	Sun I, N.		9	59 25.96	− 1.05	− 26.91	44 58 4.75	+ 3 21.53	+ 55.6	12 58 58.00	+64.71	96 8 43.1	. .
	15	Sun II, S.		9	1 35.39	− 1.05	− 26.91	45 30 8.98	+ 3 22.08	+ 56.6	13 1 7.43	−64.72	96 40 48.9	. .
	16	Polaris, S. P.		8	17 32.18	− 4.02	− 26.91	307 32 3.68	+ 3 48.92	− 1 11.9	1 17 1.25	. .	358 41 1.9	− 2.7
	17	α Draconis		9	1 37.93	− 0.71	− 26.93	333 54 2.52	+ 3 46.11	− 27.0	14 1 10.29	. .	25 3 42.8	− 1.3
	18	α Bootis		9	10 46.07	− 0.93	**− 26.92**	19 2 6.58	+ 3 27.93	+ 19.1	14 10 18.21	. .	70 12 14.8	− 2.2
	19	Mercury I, N.		9	19 49.17	− 1.12	− 26.93	56 20 7.58	+ 3 55.54	+ 1 22.7	14 19 21.12	+ 0.29	107 31 47.0	. .
	20	ρ Bootis		9	27 13.64	− 0.89	**− 26.91**	7 56 4.12	+ 4 5.54	+ 7.7	14 26 45.81	. .	59 6 38.6	− 1.2
	21	ε Bootis		9	40 19.10	− 0.90	**− 26.87**	11 16 4.62	+ 3 3.64	+ 11.0	14 39 51.26	. .	62 25 40.5	− 1.4
	22	β Ursæ Minoris		6	51 26.26	− 0.58	− 26.94	324 12 4.18	+ 3 59.22	− 39.6	14 50 58.74	. .	15 21 45.0	1.1
	23	β Bootis		9	57 58.63	− 0.85	**− 27.05**	357 58 5.58	+ 4 10.40	− 1.9	14 57 30.83	. .	49 8 35.3	− 0.9
	24	Venus I, N.		9	57 15.04	− 1.16	− 26.97	63 38 4.62	+ 3 16.22	+ 1 50.9	15 56 46.91	+ 1.09	114 49 32.9	. .
13, W.	25	α Ursæ Majoris		9	56 57.88	− 0.62	− 29.89	336 28 7.80	+ 3 5.94	− 24.6	10 56 27.37	. .	27 37 10.3	− 2.4
	26	B. A. C. 3838		.	. . .	. .	. .	12 44 5.40	+ 5 10.80	+ 12.9	11 8.1	. .	63 55 50.3	−19.5
	27	ν Ursæ Majoris		8	12 38.62	− 0.82	− 29.88	5 6 8.45	+ 3 26.46	+ 5.1	11 12 7.92	− 1.90	56 16 1.2	−21.1
	28	λ Draconis		9	24 53.41	− 0.51	− 29.88	328 52 11.08	+ 3 31.61	− 34.1	11 24 23.02	. .	20 1 29.8	− 2.6
	29	β Leonis		2	43 35.14	− 0.91	**− 29.88**	23 36 5.20	+ 3 28.93	+ 24.8	11 43 4.35	. .	74 46 20.1	− 2.3
	30	γ Ursæ Majoris		7	48 8.68	− 0.70	− 29.87	344 30 9.00	+ 3 3.40	− 15.6	11 47 38.11	. .	35 39 18.0	− 2.7
	31	a^2 Can. Venat.		9	51 2.14	− 0.80	**− 29.85**	359 52 5.95	+ 4 25.05	− 0.1	12 50 31.49	. .	51 2 52.1	− 2.2
	32	Polaris, S. P.		3	17 38.43	− 6.10	− 29.85	307 32 6.45	+ 3 46.74	− 1 13.0	1 17 2.48	. .	358 41 1.4	− 5.0
14	33	Sun I, N.		9	17 57.40	− 1.03	− 29.84	46 50 6.75	+ 4 6.84	+ 1 0.1	13 17 26.53	+65.08	98 1 34.9	. .
	34	Sun II, S.		9	20 7.57	− 1.03	− 29.84	47 22 9.88	+ 4 11.11	+ 1 1.2	13 19 36.70	−65.09	98 33 43.4	. .
	35	η Bootis		9	49 36.19	− 0.89	**− 29.78**	19 50 9.28	+ 3 54.23	+ 20.4	13 49 5.46	. .	71 0 45.1	− 0.6
	36	α Draconis		.	. . . .	. .	. .	333 54 9.20	+ 3 40.65	− 27.5	14 1.2	. .	25 3 43.5	− 2.3
	37	α Bootis		9	10 48.96	− 0.89	**− 29.86**	19 2 6.68	+ 3 28.54	+ 19.5	14 10 18.24	. .	70 12 15.9	− 2.0
	38	Mercury I, N.		6	18 0.39	− 1.08	− 29.83	55 50 8.55	+ 3 42.30	+ 1 22.8	14 17 29.48	+ 0.32	107 1 34.8	. .
	39	Moon I		9	7 1.64	− 1.09	− 29.81	57 16 . .	. . .	. . .	15 6 30.74	+65.44	107 42 . .	. .
	40	β Libræ		9	11 12.62	− 1.03	**− 29.88**	47 46 5.45	+ 3 22.37	+ 1 1.9	15 10 41.78	. .	98 56 50.9	− 0.9
	41	α Cor. Bor.		9	30 13.46	− 0.86	**− 29.76**	11 42 5.85	+ 4 32.26	+ 11.7	15 29 42.79	. .	62 53 11.0	− 1.5
	42	Venus I, N.		9	15 22.01	− 1.15	− 29.79	64 44 4.35	+ 2 49.47	+ 1 58.4	16 14 51.07	+ 1.18	115 55 13.4	. .
	43	d Sagittarii		9	11 18.36	− 1.07	**− 29.97**	57 57 59.90	+ 3 34.78	+ 1 30.4	19 10 47.33	. .	109 9 26.3	− 3.1
	44	τ Draconis		8	18 18.32	− 0.35	− 29.97	325 42 . .	. . .	. . .	19 17 48.00	. .	16 51 . .	. .
	45	δ Aquilæ		9	20 6.92	− 0.94	**− 29.98**	35 56 3.12	+ 3 41.74	+ 41.1	19 19 36.01	. .	87 6 47.2	− 2.2
	46	B. A. C. 6720		5	31 33.00	− 0.73	− 29.97	355 8 4.42	+ 3 53.60	− 4.8	19 31 2.30	− 2.08	46 18 14.4	+31.5
	47	B. A. C. 6723		3	32 49.04	− 0.68	− 29.97	347 52 5.60	+ 2 9.50	− 12.2	19 32 18.39	− 1.78	39 0 24.1	+32.5
	48	Σ (P. M.) 2355		6	41 37.67	− 0.79	− 29.98	5 30 5.15	+ 3 7.46	+ 5.5	19 41 6.90	− 2.52	56 39 39.3	+30.4
	49	(P. M.) 2355		5	41 37.91	− 0.79	− 29.98	5 30 5.15	+ 3 9.30	+ 5.5	19 41 7.14	− 2.52	56 39 41.1	+30.4
	50	λ Ursæ Minoris		2	41 34.55	+ 7.10	− 29.98	309 54 . .	. . .	. . .	19 41 11.67	. .	1 3 . .	. .

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
9	30.13	61.0	58.5		ZENITH-POINT CORR.	14	− 6.3	+ 16 2.9	.	+ 15 56.6
10	30.04	68.0	70.7		″	15	− 6.3	− 16 2.9	.	− 16 9.2
15	30.02	72.4	74.1			19	− 9.1	+ 4.1	.	− 5.0
19	30.01	74.3	79.0	12, 31. One bisection.	1 to 9 + 55.32	24	− 13.8	+ 14.9	.	+ 1.1
24	30.00	75.3	78.3	16. Three bisections.	10 to 24 + 54.75	33	− 6.5	+ 16 4.2	.	+ 15 57.7
25	30.05	64.4	65.6	19, 24, 42. Four bisections.	25 to 42 + 54.64	34	− 6.5	− 16 4.3	.	− 16 10.8
34	30.06	67.5	68.5		43 to 49 + 55.55	38	− 10.1	+ 4.6	.	− 5.5
42	30.04	68.4	70.3			42	− 14.9	+ 15.9	.	+ 1.0
45	30.05	65.3	64.8							

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Oct. 14, W.	1	B. A. C. 6830		9	49 11.53	− 0.70	− 29.98	351 12 10.75	+ 3 22.77	− 8.7	19 48 40.85	− 2.14	42 21 46.0	+33.3
	2	Anoymous		2	58 19.16	− 1.03	− 29.98	51 38 5.82	+ 2 26.27	+ 1 11.7	19 57 48.15	− 3.56	102 48 5.0	+18.0
	3	α^2 Capricorni		9	12 5.06	− 1.03	**− 29.97**	51 44 2.32	+ 2 37.70	+ 1 12.1	20 11 34.04	. .	102 54 13.3	− 2.0
	4	61[1] Cygni		9	2 10.78	− 0.76	**− 30.01**	0 40 5.58	+ 2 41.30	+ 0.7	21 1 40.01	. .	51 49 8.8	− 2.3
	5	ζ Cygni		9	8 29.08	− 0.81	**− 30.03**	9 6 6.05	+ 2 10.40	+ 9.2	21 7 58.25	. .	60 14 46.8	− 2.8
	6	1 Pegasi		9	17 12.19	− 0.86	**− 30.01**	19 30 3.62	+ 4 39.92	+ 20.3	21 16 41.31	. .	70 41 25.0	− 2.1
	7	β Cephei (R)		.	. . . .	. .	. .	211 4 3.32	+ 4 56.58	+ 34.5	. . . .	. .	19 56 46.8	− 1.2
	8	β Cephei		8	27 42.11	− 0.43	− 30.03	328 48 4.32	+ 2 54.81	− 34.5	21 27 11.65	. .	19 56 45.8	− 2.2
	9	ε Pegasi (R)		.	. . . .	. .	. .	150 24 3.88	+ 3 22.63	− 32.4	. . . .	. .	80 39 27.1	+ 1.8
	10	ε Pegasi		.	. . . .	. .	. .	29 30 4.92	+ 2 23.62	+ 32.4	21 38.5	. .	80 39 22.1	− 3.2
30, S.	11	α Gruis		9	1 23.96	− 1.30	− 30.85	86 10 11.68	+ 3 14.18	+11 58.8	22 0 51.81	. .	137 31 45.9	+ 4.7
	12	θ Aquarii		9	11 12.08	− 0.91	**− 30.90**	47 12 12.60	+ 2 8.49	+ 1 1.8	22 10 40.31	. .	98 21 44.1	− 3.7
	13	Carrington 1547, S. P.		9	19 14.81	− 2.17	− 30.86	301 4 5.42	+ 3 7.68	− 1 34.6	10 18 41.78	− 1.31	352 11 59.7	+38.5
	14	η Aquarii		9	29 53.20	− 0.86	**− 30.87**	39 32 9.58	+ 3 41.29	+ 47.4	22 29 21.47	. .	90 42 59.5	− 3.4
	15	ζ Pegasi		9	36 10.19	− 0.80	**− 30.84**	28 36 5.92	+ 3 30.19	+ 31.3	22 35 38.51	. .	79 46 28.6	− 3.3
	16	74 Aquarii		9	47 51.81	− 0.94	− 30.89	51 2 7.75	+ 4 28.12	+ 1 11.0	22 47 19.98	− 4.03	102 14 8.1	+25.1
	17	Weisse 1079		9	53 58.71	− 0.95	− 30.89	52 30 8.75	+ 3 57.99	+ 1 14.9	22 53 26.87	− 4.05	103 41 42.8	+24.8
	18	Weisse 1232		9	0 19.54	− 0.93	− 30.90	49 52 6.92	+ 4 21.21	+ 1 8.2	22 59 47.71	− 4.06	100 3 57.5	+25.9
	19	Weisse 57[1]		6	6 25.07	− 0.94	− 30.90	51 22 10.08	+ 4 12.57	+ 1 12.0	23 5 53.23	− 4.09	102 33 55.8	+25.2
	20	Weisse 57[2]		5	6 25.34	− 0.94	− 30.90	51 22 10.08	+ 4 13.12	+ 1 12.1	23 5 53.50	− 4.09	102 33 56.5	+25.2
	21	Weisse 185		9	12 6.43	− 0.94	− 30.91	51 10 9.28	+ 3 15.35	+ 1 11.5	23 11 34.58	− 4.11	102 20 57.3	+25.3
	22	Weisse 309		9	17 29.19	− 0.94	− 30.91	50 14 4.32	+ 3 7.95	+ 1 9.2	23 16 57.34	− 4.12	101 24 42.7	+25.6
	23	Weisse 377		9	21 4.88	− 0.93	− 30.91	49 30 9.20	+ 2 51.22	+ 1 7.4	23 20 33.04	− 4.14	100 40 29.0	+25.8
	24	Weisse 497		9	26 55.01	− 0.94	− 30.92	50 28 6.28	+ 2 53.62	+ 1 9.8	23 26 23.15	− 4.15	101 38 30.9	+25.6
	25	Weisse 571		9	29 57.27	− 0.93	− 30.92	50 0 12.50	+ 4 13.47	+ 1 8.7	23 29 25.42	− 4.16	101 11 55.9	+25.7
	26	B. A. C. 126 (R)		.	. . . .	. .	. .	203 20 10.65	+ 3 7.50	+ 25.0	. . . .	. .	27 42 38.0	+33.3
	27	B. A. C. 126		.	. . . .	. .	. .	336 34 7.15	+ 2 32.74	− 25.0	0 26.3	. .	27 42 36.1	+33.3
	28	β Ceti		9	38 16.14	− 0.98	**− 30.89**	57 26 7.62	+ 3 38.67	+ 1 30.3	0 37 44.19	. .	101 37 37.8	− 3.4
	29	β Andromedæ		5	3 44.71	− 0.65	**− 31.10**	3 50 12.70	+ 3 9.97	+ 3.9	1 3 13.07	. .	54 59 47.8	− 2.9
	30	Polaris		5	17 24.78	+ 7.99	− 31.00	310 10 8.65	+ 3 23.83	− 1 8.2	1 17 1.77	. .	1 18 45.5	− 1.9
	31	ξ^2 Ceti		9	22 29.79	− 0.82	**− 31.03**	30 54 3.42	+ 2 46.09	+ 34.7	2 21 57.92	. .	82 3 45.4	− 4.4
	32	γ^2 Ceti		9	37 47.76	− 0.85	**− 31.05**	36 4 6.72	+ 4 10.90	+ 42.2	2 37 15.85	. .	87 15 21.0	− 3.8
31, W.	33	δ Ophiuchi		9	8 44.31	− 0.97	**− 31.40**	42 12 7.90	+ 3 58.64	+ 51.2	16 8 11.98	. .	93 23 18.9	− 2.3
	34	τ Herculis		9	16 43.82	− 0.69	**− 31.41**	352 14 7.88	+ 3 50.73	− 7.6	16 16 11.76	. .	43 24 12.2	− 0.7
	35	η Draconis		9	22 53.66	− 0.56	− 31.37	337 4 . .	. . . .	. .	16 22 21.73	. .	28 13 . .	. .
	36	β Herculis		9	25 42.43	− 0.84	**− 31.27**	17 4 9.28	+ 4 13.12	+ 17.4	16 25 10.22	. .	68 15 1.0	− 2.0
	37	ζ Ophiuchi		9	31 14.47	− 1.01	**− 31.34**	49 8 8.42	+ 3 58.90	+ 1 5.1	16 30 42.08	. .	100 19 33.6	− 1.5
	38	η Herculis		9	39 23.86	− 0.74	**− 31.44**	359 40 10.45	+ 4 28.96	− 0.3	16 38 51.74	. .	50 51 0.3	− 0.6
	39	Venus I, S.		9	6 10.40	− 1.14	− 31.39	66 46 7.42	+ 4 17.45	+ 2 10.4	17 5 37.87	+ 1.55	117 58 56.5	. .
	40	Venus N.		.	. . . .	. .	. .	66 46 7.42	+ 3 37.15	+ 2 10.3	. . . .	. .	117 58 16.1	. .
	41	ω Piscium		9	53 51.98	− 0.91	**− 31.61**	32 36 8.82	+ 3 46.23	+ 36.3	23 53 19.47	. .	83 46 52.5	− 2.1
	42	α Andromedæ		9	2 54.39	− 0.79	**− 31.55**	10 24 8.70	+ 2 24.52	+ 10.4	0 2 22.00	. .	61 33 4.8	− 2.2
	43	γ Pegasi		9	7 46.59	− 0.87	**− 31.64**	24 18 10.98	+ 2 50.89	+ 25.6	0 7 14.12	. .	75 27 48.7	− 1.8
	44	α Cassiop. (R)		.	. . . .	. .	. .	196 56 7.80	+ 3 53.70	+ 17.3	. . . .	. .	34 6 2.4	− 1.2
	45	α Cassiopeæ		3	34 27.69	− 0.61	− 31.62	342 56 9.75	+ 3 47.79	− 17.3	0 33 55.46	. .	34 6 1.4	− 2.2
	46	Lalande 1251, 2		9	41 17.17	− 0.97	− 31.62	43 54 9.15	+ 1 57.11	+ 54.5	0 40 44.58	− 4.38	95 3 22.0	+25.8
	47	32[2] Camelop., S. P.		4	48 36.34	− 2.20	− 31.62	302 54 8.08	+ 3 44.56	− 1 27.1	12 48 2.52	. .	354 2 46.7	− 0.2
	48	Polaris		2	17 28.25	+ 5.74	− 31.64	310 10 . .	. . .	. .	1 17 2.35	. .	1 19 . .	. .
W.	49	α^2 Canum Venat.		9	51 4.42	− 0.80	**− 31.89**	359 52 11.10	+ 4 24.84	− 0.1	12 50 31.74	. .	51 2 57.0	− 2.8
	50	Polaris, S. P.		4	17 39.92	− 5.73	− 31.89	307 32 . .	. . .	. .	1 17 2.30	. .	358 41 . .	. .

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
3	30.06	64.4	63.3	ZENITH-POINT CORR.	39	− 19.6	− 20.4	+ 0.3	− 39.7
10	30.08	62.6	60.7		40	− 19.6	+ 20.4	.	+ 0.8
11	30.10	62.8	60.9	″					
25	30.10	59.8	57.5	30. Three bisections. 1 to 10 + 55.55					
32	30.07	57.0	54.5	11. Four bisections. 11 to 32 + 55.30					
37	30.03	66.3	67.9	33 to 40 + 54.81					
40	30.03	67.8	69.3	41 to 47 + 55.94					
41	30.05	65.8	65.3	49 + 54.52					
48	30.04	65.3	64.3						
49	30.16	67.7	72.6						

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
October 31, W.	1	α Virginis . . .	.	9	19 33.81	− 1.04	**− 31.88**	49 22 9.68	+ 3 13.44	+ 1 5.0	13 19 0.88	. .	100 32 49.3	− 3.8
Nov. 1	2	α Aquarii . . .	.	9	0 20.27	− 0.97	**− 32.18**	39 42 10.00	+ 3 43.94	+ 46.9	21 59 47.15	. .	90 53 2.0	− 3.8
	3	θ Aquarii . . .	.	9	11 13.38	− 1.01	**− 32.13**	47 12 10.12	+ 2 12.25	+ 1 1.0	22 10 40.21	. .	98 21 44.6	− 3.4
	4	Carrington 1547, S.P.	.	5	19 16.14	− 1.74	− 32.16	301 4 7.48	+ 3 4.01	− 1 33.3	10 18 42.24	− 1.65	352 11 59.4	+39.0
	5	α Piscis Austr. .	.	9	51 45.17	− 1.17	**− 32.18**	69 2 10.75	+ 3 29.67	+ 2 27.2	22 51 11.82	. .	120 14 28.8	− 2.2
	6	α Pegasi . . .	.	9	59 30.13	− 0.89	**− 32.17**	24 16 9.62	+ 2 14.39	+ 25.6	22 58 57.06	. .	75 25 10.8	− 2.6
	7	ψ Aquarii . . .	.	9	10 19.86	− 1.02	− 32.19	48 32 8.85	+ 3 47.87	+ 1 4.3	23 9 46.65	− 4.09	99 43 22.2	+26.0
	8	ο Cephei . . .	.	9	11 25.73	− 0.50	− 32.19	331 22 7.32	+ 3 24.03	− 30.9	23 13 53.04	. .	22 31 21.7	− 1.2
2, W.	9	ζ^1 Cancri . . .	.	6	6 3.83	− 0.48	− 32.76	20 50 7.65	+ 3 13.00	+ 23.4	8 5 30.59	− 3.97	72 0 5.2	−16.3
	10	ζ^2 Cancri . . .	.	5	6 4.12	− 0.48	− 32.76	20 50 7.65	+ 3 15.21	+ 23.4	8 5 30.88	− 3.97	72 0 7.5	−16.3
	11	D. M. +7°, 1981	8.7	9	22 38.82	− 0.58	− 32.76	31 36 8.32	+ 6 7.87	+ 37.8	8 22 5.48	− 3.65	82 49 15.2	−13.6
	12	η Cancri . . .	.	9	26 30.10	− 0.46	**− 32.73**	18 0 . .	. . .	. .	8 25 56.88	. .	69 10 . .	. .
	13	Brisbane 2071 .	.	9	28 11.77	− 1.07	− 32.76	77 26 7.90	+ 2 59.58	+ 4 30.3	8 27 37.94	− 2.78	128 39 59.0	− 0.8
	14	Yarnall 3586 .	7	9	34 13.66	− 0.46	− 32.76	18 36 1.95	+ 2 26.83	+ 20.7	8 33 40.44	− 3.80	69 45 10.7	−19.0
	15	O. Arg. S. 8965 .	.	9	41 37.92	− 0.88	− 32.76	63 4 4.55	+ 2 27.13	+ 2 0.4	8 41 4.28	− 3.04	114 14 53.3	− 4.9
	16	12-Yr. Cat., 1879, S.P.	.	9	53 28.53	− 3.23	− 32.76	298 58 2.32	+ 4 35.72	− 1 50.0	20 52 52.54	. .	350 7 9.2	− 2.3
	17	κ Cancri . . .	.	9	1 58.07	− 0.54	**− 32.75**	27 42 3.82	+ 2 44.05	+ 32.3	9 1 24.77	. .	78 51 41.4	− 3.7
	18	Moon II, S. . .	.	9	19 27.71	− 0.56	− 32.76	29 18 3.35	+ 4 10.08	+ 34.5	9 18 54.39	−62.70	80 29 9.1	. .
	19	β Cephei, S. P. .	.	9	27 44.86	− 1.85	− 32.76	288 55 58.50	+ 3 51.31	− 2 56.5	21 27 10.25	. .	340 3 14.5	− 0.4
	20	ε Leonis . . .	.	9	39 45.56	− 0.42	**− 32.75**	14 30 7.30	+ 4 36.05	+ 16.0	9 39 12.38	. .	65 41 20.6	− 2.1
	21	μ Leonis . . .	.	9	46 39.50	− 0.40	**− 32.81**	12 15 57.15	+ 4 6.96	+ 13.4	9 46 6.34	. .	63 26 38.7	− 2.3
W.	22	γ Corvi . . .	.	8	10 20.09	− 0.88	**− 32.45**	55 42 6.10	+ 3 24.85	+ 1 29.0	12 9 46.74	. .	106 53 21.2	− 2.7
	23	η Virginis . . .	.	9	14 27.74	− 0.74	**− 32.51**	38 50 4.40	+ 3 36.59	+ 48.9	12 13 54.53	. .	90 0 51.1	− 3.7
	24	κ Draconis . .	.	9	28 57.71	+ 0.39	− 32.47	328 23 57.85	+ 4 25.55	− 37.2	12 28 25.63	. .	19 34 7.4	− 2.7
	25	α^2 Canum Venat. .	.	9	51 4.90	− 0.39	− 32.48	359 52 1.55	+ 4 35.56	− 0.1	12 50 32.03	. .	51 2 58.2	− 2.2
	26	Polaris, S. P. . .	.	5	17 50.66	−17.18	− 32.49	307 31 59.62	+ 4 8.75	− 1 18.3	1 17 0.99	. .	358 41 11.3	− 2.7
	27	α Virginis . . .	.	9	19 34.24	− 0.83	**− 32.49**	49 22 3.95	+ 3 14.63	+ 1 10.4	13 19 0.92	. .	100 32 50.2	− 3.0
	28	Mercury C . . .	.	9	29 59.22	− 0.80	− 32.49	46 2 7.62	+ 3 7.53	+ 1 2.6	13 29 25.93	− 0.13	97 12 39.0	. .
	29	α Draconis . . .	.	9	1 42.37	+ 0.13	− 32.50	333 53 56.12	+ 4 2.79	− 29.4	14 1 10.00	. .	25 3 50.7	− 2.5
3	30	Sun I, N. . . .	.	9	34 29.12	− 0.87	− 32.51	53 43 59.88	+ 3 57.07	+ 1 21.9	14 33 55.74	+67.12	104 55 40.1	. .
	31	Sun II, S. . . .	.	9	36 43.37	− 0.87	− 32.51	54 16 10.65	+ 4 6.25	+ 1 23.5	14 36 9.99	−67.13	105 28 1.6	. .
	32	η Herculis . . .	.	9	39 24.70	− 0.39	**− 32.66**	359 40 6.72	+ 4 33.12	− 0.3	16 38 50.75	. .	50 51 0.7	− 0.9
	33	κ Ophiuchi . . .	.	9	52 40.18	− 0.66	**− 32.60**	29 16 6.10	+ 3 17.08	+ 33.4	16 52 6.96	. .	80 26 17.8	− 1.1
	34	η Ophiuchi . . .	.	9	4 12.78	− 0.87	− 32.56	54 23 57.12	+ 2 52.60	+ 1 23.0	17 3 39.35	− 2.63	105 34 33.9	+ 3.3
	35	Venus I, N. . .	.	5	12 29.37	− 0.99	− 32.57	66 52 2.38	+ 2 49.50	+ 2 18.6	17 11 55.81	+ 1.63	118 3 31.7	. .
	36	Venus S. . . .	.	.	. . . .	. .	. .	66 52 2.38	+ 3 32.69	+ 2 18.7	. . . .	. .	118 4 15.0	. .
	37	β Draconis . . .	.	9	28 18.62	− 0.20	− 32.57	346 25 57.58	+ 4 17.96	− 14.3	17 27 45.85	. .	37 36 22.4	− 0.8
	38	ι Herculis . . .	.	5	36 41.54	− 0.30	− 32.57	352 46 3.40	+ 3 14.76	− 7.5	17 36 8.67	− 0.37	43 55 31.9	+16.7
	39	μ Herculis . . .	.	9	42 24.91	0.51	**− 32.50**	11 2 11.48	+ 3 32.99	+ 11.7	17 41 51.82	. .	62 12 17.4	− 2.1
	40	η Serpentis . . .	.	.	. . . .	. .	. .	41 44 1.12	+ 4 12.74	+ 53.1	18 15.2	. .	92 55 28.2	− 0.9
	41	χ Draconis . . .	.	9	23 39.43	+ 0.54	− 32.59	326 10 0.62	+ 2 58.95	− 39.7	18 23 7.38	+ 3.87	17 18 41.1	+24.4
	42	1 Aquilæ . . .	.	9	29 23.30	− 0.81	**− 32.58**	47 8 4.75	+ 3 47.79	+ 1 4.1	18 28 49.90	. .	98 19 17.8	− 1.7
	43	α Lyræ	.	9	33 30.83	− 0.40	**− 32.54**	0 10 7.50	+ 2 36.67	+ 0.2	18 32 57.84	. .	51 19 5.6	− 2.6
5, S.	44	Polaris, S. P. . .	.	5	17 52.42	−21.98	− 30.52	307 32 5.75	+ 4 4.43	− 1 17.9	1 16 59.92	. .	358 41 13.5	− 1.5
	45	α Virginis . . .	.	9	19 32.24	− 0.80	**− 30.47**	49 22 7.98	+ 3 10.47	+ 1 10.0	13 19 0.92	. .	100 32 49.6	− 3.9
	46	Mercury C . . .	.	9	37 43.87	− 0.78	− 30.51	46 32 7.38	+ 4 3.54	+ 1 3.3	13 37 12.58	− 0.09	97 43 35.4	. .
	47	η Bootis . . .	.	9	49 36.67	− 0.51	**− 30.48**	19 50 5.08	+ 4 1.86	+ 21.7	13 49 5.65	. .	71 0 49.8	− 0.8
	48	α Bootis . . .	.	9	10 49.39	− 0.50	**− 30.57**	19 1 58.50	+ 3 41.23	+ 20.7	14 10 18.40	. .	70 12 21.6	− 1.3
6	49	α Aquarii . . .	.	8	0 17.97	− 0.72	**− 30.20**	39 42 1.65	+ 3 50.38	+ 49.8	21 59 47.01	. .	90 53 3.0	− 2.9
	50	α Gruis . . .	.	9	1 23.11	− 1.49	− 30.24	86 10 4.22	+ 2 45.43	+12 36.4	22 0 51.38	. .	137 31 47.2	+ 5.3

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
2	30.15	68.6	68.6
5	30.15	67.6	66.3
10	30.50	38.3	33.6
21	30.50	36.7	33.3
22	30.51	40.6	38.4
31	30.45	44.0	42.8
32	30.40	46.3	46.7
43	30.38	47.6	46.7
45	30.30	41.4	40.3
50	30.25	43.3	40.7

For summary of the constants of reduction see page 3.

		ZENITH-POINT CORR.
		″
9, 10, 35, 36, 38, 40.	One bisection.	1 + 54.52
16, 26, 44.	Three bisections.	2 to 8 + 54.27
28.	Four bisections.	9 to 21 + 57.70
18.	Five bisections.	22 to 43 + 56.78
		44 to 50 + 56.17

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
18	− 26 38.3	− 14 55.9	.	− 41 34.2
28	− 7.2	. .	− 0.9	− 8.1
30	− 7.2	+ 16 10.7	.	+ 16 3.5
31	− 7.3	− 16 10.7	.	− 16 18.0
35	− 20.6	+ 21.9	.	+ 1.3
36	− 20.6	− 21.9	+ 0.5	− 42.0
46	− 6.7	. .	− 0.7	− 7.4

21. Barometer and thermometers read at $10^h\ 0^m$.

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Nov. 6, S.	1	θ Aquarii . . .	.	9	11 11.20	− 0.80	**− 30.23**	47 12 5.18	+ 2 13.89	+ 1 4.7	22 10 40.17	. .	98 21 45.0	− 3.3
	2	Carrington 1547, S.P.	.	9	19 17.41	− 4.12	− 30.23	301 3 57.48	+ 3 17.92	− 1 38.9	10 18 43.06	− 2.48	352 11 57.7	+40.0
	3	η Aquarii . . .	.	9	29 52.41	− 0.72	**− 30.30**	39 32 4.48	+ 3 45.65	+ 49.5	22 29 21.47	. .	90 43 0.8	− 2.3
	4	ζ Pegasi . . .	.	9	36 9.27	− 0.62	**− 30.18**	28 36 0.02	+ 3 35.03	+ 32.7	22 35 38.43	. .	79 46 28.9	− 3.0
	5	74 Aquarii . . .	.	9	47 50.92	− 0.84	− 30.21	51 2 6.38	+ 4 28.19	+ 1 14.2	22 47 19.87	− 3.94	102 14 10.0	+24.5
	6	Weisse 1079 .	.	9	53 57.90	− 0.85	− 30.21	52 30 3.30	+ 4 0.98	+ 1 18.1	22 53 26.84	− 3.97	103 41 43.6	+24.1
	7	Weisse 1156 .	.	9	56 56.33	− 0.83	− 30.21	50 41 59.60	+ 3 57.22	+ 1 13.3	22 56 25.29	− 3.97	101 53 31.3	+24.7
	8	Weisse 1261 .	.	8	1 48.70	− 0.84	− 30.21	51 14 2.22	+ 4 33.57	+ 1 14.7	23 1 17.65	− 3.99	102 26 11.7	+24.6
	9	o Cephei . . .	.	9	14 22.23	+ 0.50	− 30.20	331 22 . .	. . .	. .	23 13 52.53	. .	22 31 . .	. .
	10	θ Piscium . . .	.	9	22 33.90	− 0.66	**− 30.20**	33 6 2.80	+ 2 31.89	+ 39.1	23 22 3.04	. .	84 15 35.0	− 4.0
8, W.	11	α Aquarii . . .	.	9	0 17.02	− 0.78	**− 29.22**	39 42 5.82	+ 3 47.68	+ 49.0	21 59 47.06	. .	90 53 3.7	− 2.3
	12	π^1 Pegasi . . .	.	5	4 33.11	− 0.48	− 29.18	6 14 5.20	+ 3 2.13	+ 6.5	22 4 3.45	− 3.45	57 23 35.0	+37.1
	13	π^2 Pegasi . . .	.	9	5 17.92	− 0.48	29.18	6 14 5.20	+ 2 49.83	+ 6.5	22 4 48.26	− 3.46	57 23 22.7	+37.1
	14	θ Aquarii . . .	.	9	11 10.19	− 0.84	**− 29.21**	47 12 6.70	+ 2 14.45	+ 1 3.6	22 10 40.17	. .	98 21 46.0	− 2.4
	15	γ Aquarii . . .	.	9	16 7.38	− 0.79	− 29.18	40 48 4.10	+ 3 8.10	+ 51.0	22 15 37.41	− 3.71	91 58 24.4	+27.2
	16	π Aquarii . . .	.	9	19 48.64	− 0.76	**− 29.09**	38 2 6.05	+ 3 31.17	+ 46.1	22 19 18.70	. .	89 12 44.5	− 2.6
	17	B. A. C. 7855 .	.	9	26 59.16	− 0.25	− 29.18	349 10 7.55	+ 2 26.49	− 11.2	22 26 29.73	− 3.71	40 18 44.0	+40.3
	18	ζ Pegasi . . .	.	8	36 8.32	− 0.68	**− 29.20**	28 36 4.02	+ 3 31.52	+ 32.3	22 35 38.46	. .	79 46 29.0	− 2.9
	19	λ Pegasi . . .	.	9	41 24.47	− 0.57	− 29.17	15 52 8.50	+ 3 54.11	+ 16.9	22 40 54.73	− 3.82	67 2 40.7	+34.9
	20	Weisse 966 . .	.	9	48 27.76	− 0.88	− 29.17	51 38 7.40	+ 2 49.74	+ 1 14.6	22 47 57.71	− 3.91	102 48 32.9	+24.1
	21	Weisse 1156 .	.	9	56 55.33	− 0.87	− 29.17	50 42 3.42	+ 3 54.73	+ 1 12.3	22 56 25.29	− 3.94	101 53 31.7	+24.5
	22	Weisse 1204 .	.	9	58 52.79	− 0.88	− 29.17	51 38 12.22	+ 2 37.58	+ 1 14.6	22 58 22.74	− 3.95	102 48 25.6	+24.2
	23	Weisse 1261 .	.	9	1 47.70	− 0.88	− 29.17	51 14 2.25	+ 4 34.90	+ 1 13.7	23 1 17.65	− 3.96	102 26 12.1	+24.4
	24	Weisse 49 . .	.	9	5 53.73	− 0.87	− 29.17	49 58 3.42	+ 2 52.47	+ 1 10.4	23 5 23.69	− 3.97	101 8 27.5	+24.8
	25	Lalande 45504 .	.	9	9 45.67	− 0.88	− 29.17	51 0 3.52	+ 4 22.33	+ 1 13.1	23 9 15.62	− 3.99	102 12 0.1	+24.5
	26	Weisse 185 . .	.	9	12 4.57	− 0.88	− 29.17	51 10 8.18	+ 3 16.23	+ 1 13.5	23 11 34.52	− 3.99	102 20 59.1	+24.4
	27	Weisse 265 . .	.	9	15 18.31	− 0.87	− 29.17	49 58 6.30	+ 4 36.10	+ 1 10.5	23 14 48.27	− 4.01	101 10 14.1	+24.8
	28	Weisse 309 . .	.	9	17 27.40	− 0.87	− 29.16	50 13 59.62	+ 3 12.21	+ 1 11.1	23 16 57.37	− 4.01	101 24 44.1	+24.8
	29	Weisse 402 . .	.	9	22 30.94	− 0.88	− 29.16	50 54 1.08	+ 3 52.90	+ 1 12.8	23 22 0.90	− 4.03	102 5 28.0	+24.6
	30	Weisse 571 . .	.	9	29 55.52	− 0.88	− 29.16	50 0 7.38	+ 4 20.13	+ 1 10.6	23 29 25.48	− 4.06	101 11 59.3	+24.8
	31	Weisse 629 . .	.	9	32 40.97	− 0.85	− 29.16	48 6 3.35	+ 2 51.34	+ 1 6.0	23 32 10.96	− 4.07	99 16 21.9	+25.4
	32	δ Sculptoris . .	.	9	43 21.02	− 1.05	− 29.16	67 34 3.10	+ 3 48.72	+ 2 23.0	23 42 50.81	− 4.10	118 46 36.0	+19.6
	33	ω Piscium (R) . .	.	.	. . . .	. .	. .	147 16 5.95	+ 3 57.50	− 38.0	. . . .	. .	83 46 55.8	+ 1.0
	34	ω Piscium . . .	.	.	. . . .	. .	. .	32 36 7.20	+ 3 45.46	+ 38.0	23 53.3	. .	83 46 51.9	− 2.9
	35	δ Piscium . . .	.	9	43 8.03	− 0.71	− 29.14	31 52 0.90	+ 3 57.42	+ 37.0	0 42 38.18	− 4.48	83 2 56.5	+27.5
	36	D. M. + 60°, 146	.	9	55 56.42	0.00	− 29.14	337 53 58.88	+ 2 23.06	− 24.1	0 55 27.28	− 6.88	29 2 19.0	+32.5
	37	B. A. C. 302 . .	.	9	59 33.17	+ 0.03	− 29.14	336 42 5.00	+ 3 38.43	− 25.5	0 59 4.06	− 7.09	27 51 39.1	+32.1
	38	B. A. C. 362. .	.	9	7 23.29	− 1.08	− 29.14	70 12 1.55	+ 4 8.18	+ 2 44.4	1 6 53.07	− 4.18	121 25 15.3	+18.6
	39	Taylor 407 . .	.	9	10 26.51	− 1.32	− 29.14	84 50 7.35	+ 3 9.38	+ 9 54.2	1 9 56.05	− 4.13	136 9 32.1	+15.6
	40	Polaris . . .	.	6	17 12.13	+16.23	− 29.14	310 10 8.32	+ 3 23.82	− 1 10.3	1 16 59.22	. .	1 18 43.0	− 1.2
	41	η Piscium . . .	.	9	25 44.78	− 0.65	**− 29.11**	24 6 2.45	+ 2 27.30	+ 26.7	1 25 15.00	. .	75 15 17.7	− 2.7
	42	B. A. C. 489 . .	.	9	31 15.82	− 1.07	− 29.13	69 20 5.90	+ 1 18.83	+ 2 36.8	1 30 45.62	− 4.18	120 30 22.7	+18.4
	43	o Piscium . . .	.	9	39 44.38	− 0.70	**− 29.15**	30 16 2.85	+ 2 46.73	+ 34.8	1 39 14.55	. .	81 25 45.6	− 2.6
	44	B. A. C. 558 . .	.	9	44 50.87	− 0.16	− 29.13	344 16 4.12	+ 3 39.48	− 16.7	1 44 21.58	− 6.84	35 25 48.1	+26.7
	45	β Arietis . . .	.	9	48 42.21	− 0.60	**− 29.20**	18 36 1.35	+ 3 0.80	+ 20.1	1 48 12.48	. .	69 45 43.5	− 1.6
	46	α Arietis . . .	.	9	1 6.21	− 0.57	**− 29.06**	15 56 0.18	+ 2 41.18	+ 17.1	2 0 36.52	. .	67 5 19.7	− 3.1
	47	Astræa . . .	.	9	16 49.96	− 0.73	− 29.12	34 6 4.08	+ 1 54.18	+ 40.5	2 16 20.11	. .	85 15 0.0	− 3.1
	48	B. A. C. 2300[1] .	.	.	. . . .	. .	. .	345 54 2.32	+ 4 10.77	− 15.1	. . . .	. .	37 4 19.2	−20.4
	49	B. A. C. 2300[2] .	.	.	. . . .	. .	. .	345 54 2.32	+ 4 15.21	− 15.1	6 56.3	. .	37 4 23.6	−20.4
	50	δ Geminorum . .	.	9	13 38.83	− 0.52	**− 29.17**	16 38 4.82	+ 3 34.20	+ 18.1	7 13 9.16	. .	67 48 18.3	− 1.8

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
13	30.24	51.0	48.6		ZENITH-POINT CORR.					
20	30.25	49.7	47.4		″					
31	30.25	48.6	46.3							
46	30.24	46.3	42.6	12, 13, 48, 49. One bisection.	1 to 10 + 56.71					
50	. .	. .	37.2	47. Four bisections.	11 to 50 + 56.71					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
Nov.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
8, W.	1	B. A. C. 2439		8	19 12.59	+ 0.55	— 29.15	330 8 3.18	+ 4 19.53	— 34.5	7 18 43.99	— 8.35	21 18 9.4	—26.8
	2	D.M. + 11°, 1617	8.7	9	28 45.89	— 0.62	— 29.15	27 0 8.40	+ 3 26.44	+ 30.8	7 28 16.12	— 4.23	78 10 26.8	—11.8
	3	α Canis Minoris		9	33 41.34	— 0.68	— **29.18**	33 18 7.38	+ 3 24.56	+ 39.7	7 33 11.51	. .	84 28 32.8	— 2.8
	4	β Geminorum		9	38 39.82	— 0.45	— **29.11**	10 32 5.05	+ 3 2.70	+ 11.3	7 38 10.22	. .	61 41 40.3	— 2.1
	5	λ Ursæ Min., S. P.		3	41 32.60	—27.15	— 29.15	307 48 3.40	+ 4 17.74	— 1 17.4	19 40 36.30	. .	358 57 24.9	— 1.9
W.	6	ρ Bootis		9	27 15.18	— 0.58	— 28.75	7 56 . .	. . .	. .	14 26 45.85	. .	59 7 . .	. .
	7	β Ursæ Minoris		9	51 25.73	+ 0.60	— 28.75	324 12 4.62	+ 4 10.94	— 41.9	14 50 57.58	. .	15 21 54.9	— 2.3
9	8	Sun I, N.		9	58 22.47	— 1.02	— 28.75	55 32 6.92	+ 3 3.65	+ 1 24.8	14 57 52.70	+67.76	106 42 56.6	. .
	9	Sun II, S.		9	0 38.00	— 1.02	— 28.75	56 4 0.15	+ 3 29.66	+ 1 26.6	15 0 8.23	—67.77	107 15 17.6	. .
	10	δ Ursæ Minoris		4	10 9.10	+ 5.56	— 28.75	312 13 57.75	+ 3 47.25	— 1 3.2	18 9 45.91	. .	3 23 3.0	— 1.5
	11	1 Aquilæ		9	29 19.54	— 0.93	— **28.76**	47 8 3.55	+ 3 50.87	+ 1 2.0	18 28 49.86	. .	98 19 17.6	— 2.2
	12	α Lyræ		9	33 27.02	— 0.50	— **28.74**	0 10 5.75	+ 2 40.06	+ 0.2	18 32 57.77	. .	51 19 7.2	— 2.0
	13	β Lyræ		9	46 14.24	— 0.56	— **28.74**	5 36 2.55	+ 3 31.15	+ 5.7	18 45 44.93	. .	56 46 0.6	— 1.4
11, S.	14	α Gruis		9	1 21.19	— 1.33	— 28.32	86 10 13.08	+ 3 1.05	+ 12 10.3	22 0 51.54	. .	137 31 45.6	+ 3.3
	15	θ Aquarii		9	11 9.34	— 0.90	— **28.34**	47 12 14.78	+ 2 6.22	+ 1 2.7	22 10 40.13	. .	98 21 44.9	— 3.7
	16	π Aquarii		9	19 47.84	— 0.84	— **28.25**	38 2 10.78	+ 3 26.25	+ 45.5	22 19 18.69	. .	89 12 43.7	— 3.6
	17	9 Draconis, S. P.		9	25 35.13	— 1.76	— 28.31	295 12 7.88	+ 2 5.13	— 2 2.6	10 25 5.06	. .	346 18 31.6	— 0.6
	18	η Aquarii		8	29 50.48	— 0.85	— **28.31**	39 32 12.50	+ 3 38.95	+ 48.0	22 29 21.32	. .	90 43 0.6	— 2.8
	19	ζ Pegasi		9	36 7.51	— 0.77	— **28.34**	28 36 9.08	+ 3 27.07	+ 31.7	22 35 38.43	. .	79 46 29.1	— 2.9
	20	74 Aquarii		9	47 48.92	— 0.93	— 28.30	51 2 11.45	+ 4 25.36	+ 1 11.9	22 47 19.69	— 3.86	102 14 9.9	+24.1
	21	Weisse 1047		9	52 28.50	— 0.92	— 28.30	50 34 6.82	+ 3 38.30	+ 1 10.7	22 51 59.28	— 3.88	101 45 17.0	+24.3
	22	Weisse 1156		9	56 54.47	— 0.93	— 28.30	50 42 9.40	+ 3 49.28	+ 1 11.1	22 56 25.24	— 3.90	101 53 31.0	+24.3
	23	Weisse 1249		9	1 20.61	— 0.94	— 28.30	52 10 13.48	+ 3 35.42	+ 1 14.9	23 0 51.37	— 3.92	103 21 25.0	+23.8
	24	Weisse 57[1]		6	6 22.27	— 0.93	— 28.29	51 22 11.25	+ 4 11.17	+ 1 12.8	23 5 53.05	— 3.93	102 33 56.4	+24.1
	25	Weisse 57[2]		5	6 22.66	— 0.93	— 28.29	51 22 11.25	+ 4 12.62	+ 1 12.8	23 5 53.44	— 3.93	102 33 57.9	+24.1
	26	Weisse 185		9	12 3.71	— 0.93	— 28.29	51 10 12.22	+ 3 13.57	+ 1 12.2	23 11 34.49	— 3.96	102 20 59.2	+24.2
	27	Weisse 309		9	17 26.47	— 0.92	— 28.29	50 14 6.90	+ 3 6.63	+ 1 9.9	23 16 57.26	— 3.98	101 24 44.6	+24.5
	28	Weisse 377		9	21 2.16	— 0.92	— 28.29	49 30 11.52	+ 2 49.95	+ 1 8.1	23 20 32.95	— 3.99	100 40 30.8	+24.8
	29	Weisse 427		9	23 27.63	— 0.91	— 28.29	48 44 6.18	+ 2 53.04	+ 1 6.3	23 22 58.43	— 4.00	99 54 26.7	+25.0
	30	Weisse 497		9	26 52.23	— 0.92	— 28.29	50 28 9.85	+ 2 51.51	+ 1 10.5	23 26 23.02	— 4.01	101 38 33.1	+24.4
	31	Weisse 586		9	30 28.08	— 0.91	— 28.29	48 14 8.25	+ 2 59.81	+ 1 5.1	23 29 58.88	— 4.03	99 24 34.4	+25.1
	32	Weisse 629		9	32 40.06	— 0.91	— 28.28	48 6 7.78	+ 2 47.08	+ 1 4.8	23 32 10.87	— 4.04	99 16 20.9	+25.1
	33	ι Piscium		9	34 26.11	— 0.81	— **28.29**	33 50 11.35	+ 3 3.69	+ 39.0	23 33 57.02	. .	85 0 15.2	— 3.2
	34	α Andromedæ		9	2 50.86	— 0.64	— **28.27**	10 24 6.68	+ 2 25.11	+ 10.7	0 2 21.95	. .	61 33 3.7	— 2.3
	35	γ Pegasi		9	7 43.03	— 0.75	— **28.27**	24 18 9.08	+ 2 50.66	+ 26.3	0 7 14.01	. .	75 27 47.2	— 3.0
13, W.	36	α Canis Minoris		9	33 41.66	— 0.68	— **29.36**	33 18 . .	. . .	. .	7 33 11.56	. .	84 28 . .	. .
	37	β Geminorum		9	38 40.32	— 0.50	— **29.40**	10 32 . .	. . .	. .	7 38 10.40	. .	61 42 . .	. .
	38	λ Ursæ Minoris		3	41 19.93	—20.81	— 29.42	307 48 . .	. . .	. .	19 40 29.70	. .	358 57 . .	. .
	39	Anonymous		9	48 54.54	— 0.71	— 29.42	36 48 10.22	+ 5 1.77	+ 44.0	7 48 24.41	— 4.06	88 0 17.2	—11.2
	40	15 Argus		9	3 4.96	— 0.92	— **29.39**	62 46 . .	. . .	. .	8 2 34.62	. .	113 58 . .	. .
	41	η Cancri		3	26 27.36	— 0.56	— **29.52**	18 0 . .	. . .	. .	8 25 57.38	. .	69 10 . .	. .
14, S.	42	π Aquarii		9	19 48.39	— 0.63	— **29.05**	38 2 2.68	+ 3 33.41	+ 46.7	22 19 18.73	. .	89 12 44.0	— 3.5
	43	9 Draconis, S. P.		9	25 36.06	— 2.35	— 29.02	295 12 1.30	+ 2 13.76	— 2 5.9	10 25 4.69	. .	346 18 30.4	— 1.2
	44	η Aquarii		9	29 50.92	— 0.64	— **29.00**	39 32 7.98	+ 3 42.20	+ 49.3	22 29 21.26	. .	90 43 0.7	— 2.8
	45	ζ Pegasi		9	36 7.93	— 0.55	— **29.02**	28 36 0.60	+ 3 34.65	+ 32.6	22 35 38.36	. .	79 46 29.0	— 3.1
	46	Weisse 966		9	48 27.26	— 0.75	— 29.01	51 38 3.02	+ 2 52.94	+ 1 15.4	22 47 57.50	— 3.84	102 48 32.6	+23.8
	47	Weisse 1047		9	52 29.08	— 0.74	— 29.01	50 34 0.88	+ 3 42.69	+ 1 12.7	22 51 59.33	— 3.86	101 45 17.5	+24.2
	48	Weisse 1156		6	56 54.96	— 0.74	— 29.01	50 42 4.12	+ 3 52.09	+ 1 13.1	22 56 25.21	— 3.88	101 53 30.5	+24.1
	49	Weisse 1204		9	58 52.38	— 0.75	— 29.01	51 38 2.32	+ 2 45.47	+ 1 15.5	22 58 22.62	— 3.88	102 48 24.5	+23.8
	50	Weisse 57[1]		6	6 22.82	— 0.75	— 29.01	51 22 4.62	+ 4 15.81	+ 1 14.9	23 5 53.06	— 3.91	102 33 56.5	+24.0

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page* 3.	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
5	30.21	40.9	37.0	ZENITH-POINT CORR.	8	— 7.4	+ 16 10.5	. .	+ 16 3.1
9	30.17	50.5	53.2	″	9	— 7.4	— 16 10.5	. .	— 16 17.9
12	30.12	57.8	59.3						
14	30.23	57.5	55.8	2. Four bisections. 1 to 5 + 56.71					
35	30.20	55.2	53.9	7 to 13 + 56.26					
40	30.03	39.8	46.2	14 to 35 + 56.09					
41	30.06	39.7	35.8	39 + 58.65					
42	29.95	41.2	38.2	42 to 50 + 56.28					

5. Barometer and thermometers read at $8^h\ 40^m$.
41. Barometer and thermometers read at $10^h\ 10^m$.

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
Nov.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.		° ′ ″	″
14, S.	1	Weisse 57[2]		5	6 23.10	− 0.75	− 29.01	51 22 4.62	+ 4 17.01	+ 1 14.9	23 5 53.34	− 3.91	102 33 57.7	+24.0
	2	Lalande 45504		9	9 45.18	− 0.75	− 29.01	51 0 3.68	+ 4 21.52	+ 1 13.9	23 9 15.42	− 3.93	102 12 0.3	+24.1
	3	Weisse 226		3	13 23.02	− 0.73	− 29.01	49 3 58.38	+ 3 24.23	+ 1 9.0	23 12 53.28	− 3.94	100 14 52.8	+24.8
	4	Weisse 315		6	17 43.79	− 0.73	− 29.00	48 50 4.30	+ 3 52.92	+ 1 8.5	23 17 14.06	− 3.96	100 1 26.9	+24.8
	5	Weisse 402		9	22 30.46	− 0.74	− 29.00	50 53 58.72	+ 3 53.79	+ 1 13.7	23 22 0.72	− 3.98	102 5 27.4	+24.1
	6	Weisse 497		9	26 52.67	− 0.74	− 29.00	50 28 1.95	+ 2 57.41	+ 1 12.5	23 26 22.93	− 4.00	101 38 33.1	+24.3
	7	Weisse 586		3	30 28.53	− 0.72	− 29.00	48 14 0.60	+ 3 6.25	+ 1 7.0	23 29 58.81	− 4.01	99 24 35.0	+25.0
	8	Weisse 629		4	32 40.56	− 0.72	− 29.00	48 6 1.72	+ 2 51.21	+ 1 6.7	23 32 10.84	− 4.02	99 16 20.8	+25.0
	9	ω Piscium (R)			. . . .	. . . .	. .	147 15 55.90	+ 4 6.72	− 38.3	. . . .	. .	83 46 56.9	+ 2.0
	10	ω Piscium			. . . .	. . . .	. .	32 36 0.45	+ 3 52.35	+ 38.3	23 53.3	. .	83 46 52.3	− 2.6
	11	α Andromedæ		9	2 51.24	− 0.38	**− 28.94**	10 24 0.20	+ 2 32.15	+ 11.0	0 2 21.87	. .	61 33 4.6	− 1.2
	12	B. A. C. 79 (R)			. . . .	. . . .	. .	192 23 59.45	+ 4 41.41	+ 13.2	. . . .	. .	38 37 27.1	+36.8
	13	B. A. C. 79			. . . .	. . . .	. .	347 28 2.75	+ 3 14.09	− 13.2	0 18.0	. .	38 37 24.8	+36.8
	14	ε Piscium		9	57 23.26	− 0.57	**− 28.99**	31 33 58.88	+ 3 17.05	+ 36.8	0 56 53.72	. .	82 44 13.9	− 3.2
	15	β Andromedæ		9	3 41.21	− 0.30	**− 28.99**	3 50 4.52	+ 3 16.66	+ 4.1	1 3 12.95	. .	54 59 46.5	− 2.1
	16	Polaris		1	17 8.30	+ 18.36	− 28.96	310 10 . .	. . .	. . .	1 16 57.70	. .	1 19 . .	. .
W.	17	α[2] Canum Venat.		9	51 1.08	− 0.35	− 28.61	359 52 3.52	+ 4 37.62	− 0.1	12 50 32.12	. .	51 3 2.2	− 1.9
	18	Polaris, S. P.		6	17 48.27	− 20.99	− 28.60	307 32 1.72	+ 4 10.18	− 1 17.0	1 16 58.68	. .	358 41 16.1	− 1.9
	19	α Virginis		9	19 30.61	− 0.88	**− 28.59**	49 22 4.32	+ 3 17.39	+ 1 9.2	13 19 1.13	. .	100 32 52.1	− 2.1
	20	ζ Virginis		9	29 12.54	− 0.77	**− 28.61**	38 48 7.05	+ 4 25.84	+ 47.8	13 28 43.18	. .	89 59 41.9	− 3.3
	21	η Ursæ Majoris		9	43 22.78	− 0.17	− 28.59	348 56 2.95	+ 3 58.82	− 11.5	13 42 54.02	. .	40 6 11.5	− 1.3
	22	η Bootis		9	49 35.01	− 0.59	**− 28.60**	19 50 6.18	+ 4 2.44	+ 21.4	13 49 5.83	. .	71 0 51.2	− 1.6
	23	α Draconis		9	1 38.50	+ 0.29	− 28.58	333 53 59.72	+ 4 3.34	− 28.9	14 1 10.21	. .	25 3 55.4	− 2.3
	24	α Bootis		9	10 47.56	− 0.58	**− 28.55**	19 2 6.48	+ 3 35.18	+ 20.5	14 10 18.40	. .	70 12 23.4	− 1.8
	25	Mercury II, C.		9	18 53.87	− 0.89	− 28.57	50 36 3.05	+ 2 52.95	+ 1 12.0	14 18 24.41	− 0.20	101 46 29.2	. .
	26	ρ Bootis			. . . .	. . . .	. .	7 56 3.92	+ 4 14.10	+ 8.3	14 26.8	. .	59 6 47.5	− 2.1
15	27	Sun I, N.		9	22 49.81	− 0.96	− 28.55	57 8 4.00	+ 3 56.46	+ 1 31.1	15 22 20.30	+68.51	108 19 52.8	. .
	28	Sun II, S.		9	25 6.84	− 0.96	− 28.55	57 40 7.02	+ 4 14.50	+ 1 33.0	15 24 37.33	−68.52	108 52 15.7	. .
	29	η Herculis		9	39 20.49	− 0.35	**− 28.58**	359 40 10.05	+ 4 32.95	− 0.3	16 38 51.63	. .	50 51 3.9	− 0.9
	30	α[1] Herculis		9	9 46.93	− 0.63	**− 28.50**	24 17 58.60	+ 3 30.27	+ 26.5	17 9 17.80	. .	75 28 16.6	− 2.8
	31	Venus I, N.		9	25 12.90	− 1.07	− 28.49	66 20 3.45	+ 3 36.01	+ 2 13.1	17 24 43.34	+ 1.98	117 32 13.8	. .
	32	Venus S.			. . . .	. . . .	. .	66 20 3.45	+ 4 25.60	+ 2 13.2	. . . .	. .	117 33 3.4	. .
	33	α Ophiuchi.		9	29 58.42	− 0.65	**− 28.45**	26 9 57.58	+ 4 11.63	+ 28.8	17 29 29.28	. .	77 20 59.2	− 2.3
	34	ι Herculis		9	36 37.04	− 0.24	− 28.49	352 46 3.52	+ 3 16.31	− 7.4	17 36 8.31	− 0.17	43 55 33.6	+13.9
	35	μ Herculis		9	42 20.73	− 0.49	**− 28.45**	11 2 4.92	+ 3 42.14	+ 11.5	17 41 51.75	. .	62 12 19.8	− 2.1
	36	δ Ursæ Minoris		9	10 4.06	+ 7.17	− 28.48	312 14 4.22	+ 3 43.35	− 1 4.3	18 9 42.75	. .	3 23 4.5	− 1.2
	37	η Serpentis		9	15 44.00	− 0.80	**− 28.51**	41 44 0.78	+ 4 13.45	+ 52.4	18 15 14.73	. .	92 55 27.8	− 2.1
	38	χ Draconis		9	23 34.23	+ 0.79	− 28.47	326 9 59.15	+ 3 2.04	− 39.2	18 23 6.55	+ 4.61	17 18 43.2	+21.9
	39	ι Aquilæ		9	29 19.13	− 0.86	**− 28.48**	47 8 4.65	+ 3 49.27	+ 1 3.3	18 28 49.80	. .	98 19 18.4	− 1.6
	40	α Lyræ		9	33 26.53	− 0.36	**− 28.49**	0 10 10.65	+ 2 36.52	+ 0.2	18 32 57.70	. .	51 19 8.6	− 1.7
	41	β Lyræ		9	46 13.71	− 0.43	**− 28.44**	5 36 3.85	+ 3 31.01	+ 5.8	18 45 44.82	. .	56 46 1.9	− 1.1
	42	Moon I, S.		9	30 17.30	− 0.96	− 28.47	56 57 58.98	+ 4 47.37	+ 1 30.4	19 29 47.87	+68.48	108 10 38.0	. .
	43	δ Cygni		9	41 47.33	− 0.26	− 28.47	354 0 3.18	+ 2 33.76	− 6.1	19 41 18.60	− 1.32	45 8 52.0	+30.6
	44	α Aquilæ		9	45 33.33	− 0.69	**− 28.44**	30 15 56.12	+ 3 16.07	+ 34.4	19 45 4.18	. .	81 26 7.8	− 1.8
	45	β Aquilæ		9	50 2.87	− 0.72	**− 28.45**	32 42 5.12	+ 3 45.98	+ 37.8	19 49 33.69	. .	83 52 50.1	− 1.5
	46	B. A. C. 6858		9	54 2.01	− 0.58	− 28.46	19 39 57.38	+ 2 31.26	+ 21.1	19 53 32.97	− 2.40	70 49 10.9	+26.4
	47	B. A. C. 6905		9	0 41.55	+ 0.27	− 28.46	334 21 59.88	+ 2 4.09	− 28.2	20 0 13.36	+ 0.18	25 29 57.0	+34.7
	48	α[2] Capricorni		9	12 2.97	− 0.90	**− 28.51**	51 43 57.68	+ 2 40.87	+ 1 14.5	20 11 33.61	. .	102 54 14.3	− 2.2
	49	η Aquarii		9	29 50.46	− 0.74	**− 28.45**	39 32 3.38	+ 3 46.83	+ 49.4	22 29 21.10	. .	90 43 0.8	− 2.8
	50	ζ Pegasi		9	36 7.48	− 0.63	**− 28.50**	28 36 3.32	+ 3 31.30	+ 32.7	22 35 38.24	. .	79 46 28.5	− 3.6

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*		No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°				′ ″	′ ″	″	′ ″
8	29.93	39.2	36.0		ZENITH-POINT CORR.	25	− 5.8	. . .	− 0.2	− 6.0
16	29.92	40.2	35.8			27	− 7.5	+ 16 11.4	.	+ 16 3.9
17	30.02	41.6	40.3		″	28	− 7.6	− 16 11.4	.	− 16 19.0
26	30.06	44.6	44.4	31, 36. Three bisections.	1 to 15 + 56.28	31	− 25.0	+ 25 0	.	0.0
28	30.06	46.2	46.2	18, 25. Four bisections.	17 to 48 + 56.12	32	− 25.0	− 25.0	+ 0.4	− 49.6
31	. .	. .	49.1	42. Five bisections.	49 to 50 + 55.42	42	− 48 13.6	− 15 44.4	.	− 63 58.0
48	30.12	47.6	47.6							
49	30.16	42.9	40.3							

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Nov. 15, W.	1	Weisse 966		9	48 26.94	− 0.86	− 28.60	51 38 3.92	+ 2 51.97	+ 1 15.6	22 47 57.48	− 3.84	102 48 32.7	+23.7
	2	Weisse 1156		9	56 54.60	− 0.85	− 28.59	50 42 6.20	+ 3 51.23	+ 1 13.2	22 56 25.16	− 3.87	101 53 31.8	+24.1
	3	Weisse 1249		9	1 20.68	− 0.87	− 28.59	52 10 2.60	+ 3 43.67	+ 1 17.2	23 0 51.22	− 3.89	103 21 24.7	+23.6
	4	Weisse 57[1]		8	6 22.37	− 0.86	− 28.58	51 22 5.90	+ 4 16.09	+ 1 15.0	23 5 52.93	− 3.91	102 33 58.2	+23.9
	5	Weisse 57[2]		3	6 22.66	0.86	− 28.58	51 22 5.90	+ 4 16.56	+ 1 15.0	23 5 53.22	− 3.91	102 33 58.7	+23.9
	6	Lalande 45504		9	9 44.78	− 0.86	− 28.58	51 0 8.12	+ 4 17.55	+ 1 14.1	23 9 15.34	− 3.92	102 12 1.0	+24.0
	7	Weisse 185		9	12 3.72	− 0.86	− 28.57	51 10 5.90	+ 4 17.84	+ 1 14.5	23 11 34.29	− 3.93	102 21 59.4	+24.0
	8	Weisse 265		9	15 17.48	− 0.85	− 28.57	49 58 4.62	+ 4 36.20	+ 1 11.4	23 14 48.06	− 3.94	101 10 13.4	+24.4
	9	Weisse 309		9	17 26.58	− 0.85	− 28.57	50 14 2.08	+ 3 9.05	+ 1 12.1	23 16 57.16	− 3.95	101 24 44.4	+24.3
	10	Weisse 402		9	22 30.07	− 0.86	− 28.56	50 54 1.98	+ 3 51.77	+ 1 13.9	23 22 0.65	− 3.97	102 5 28.9	+24.1
	11	Weisse 571		9	29 54.60	− 0.85	− 28.56	50 0 5.00	+ 4 21.56	+ 1 11.6	23 29 25.19	− 4.00	101 11 59.4	+24.3
	12	Weisse 629		9	32 40.11	− 0.83	− 28.55	48 6 2.30	+ 2 50.58	+ 1 6.9	23 32 10.73	− 4.02	99 16 21.0	+24.9
	13	106 Aquarii		3	38 38.28	− 0.93	− 28.55	57 44 1.82	+ 3 30.74	+ 1 35.0	23 38 8.80	− 4.02	108 55 28.8	+21.8
	14	Groom. 4163		9	49 40.84	+ 1.04	− 28.54	325 6 4.25	+ 2 20.32	− 41.8	23 49 13.34	. .	16 14 4.0	− 2.5
	15	ω Piscium		9	53 48.51	− 0.67	**− 28.50**	32 36 7.32	+ 3 46.13	+ 38.5	23 53 19.31	. .	83 46 53.1	− 1.8
	16	α Andromedæ		9	2 50.80	− 0.44	**− 28.45**	10 24 0.52	+ 2 30.34	+ 11.1	0 2 21.83	. .	61 33 3.2	− 2.5
	17	γ Pegasi		9	7 42.97	− 0.59	**− 28.41**	24 18 6.35	+ 2 52.58	+ 27.2	0 7 13.86	. .	75 27 47.3	− 2.9
	18	B. A. C. 79 (R)		.	. . . .	. .	. .	192 24 3.35	+ 4 39.81	+ 13.3	. . . .	. .	38 37 24.7	+37.0
	19	B. A. C. 79		.	. . . .	. .	. .	347 28 2.78	+ 3 15.23	− 13.3	0 18.0	. .	38 37 25.9	+37.0
	20	B. A. C. 166 (R)		.	. . . .	. .	. .	171 16 5.20	+ 3 52.18	− 9.2	. . . .	. .	59 46 33.0	+32.9
	21	B. A. C. 166		.	. . . .	. .	. .	8 36 7.10	+ 3 53.45	+ 9.2	0 33.1	. .	59 46 31.0	+32.9
	22	B. A. C. 326		9	2 40.37	− 1.12	− 28.46	72 14 0.40	+ 2 48.47	+ 3 6.8	1 2 10.79	− 4.13	123 26 16.9	+16.9
	23	B. A. C. 362		9	7 22.43	− 1.09	− 28.46	70 12 5.88	+ 4 3.88	+ 2 46.8	1 6 52.88	− 4.14	121 25 17.8	+17.3
	24	Taylor 407		9	10 25.69	− 1.35	− 28.46	84 50 9.70	+ 2 55.83	+10 3.9	1 9 55.88	− 4.07	136 9 30.6	+14.0
	25	Polaris		7	17 6.00	+21.26	− 28.45	310 10 6.18	+ 3 23.38	− 1 11.3	1 16 58.81	. .	1 18 39.5	− 2.3
	26	B. A. C. 466		9	28 13.06	− 1.18	− 28.44	76 14 1.82	+ 3 34.51	+ 4 3.4	1 27 43.44	− 4.11	127 28 0.9	+15.6
	27	B. A. C. 558		9	44 50.10	+ 0.01	− 28.42	344 16 6.10	+ 3 35.73	− 17.0	1 44 21.69	− 6.86	35 25 46.0	+28.4
	28	B. A. C. 570		9	46 58.17	− 1.23	− 28.42	79 10 8.42	+ 3 14.65	+ 5 8.5	1 46 28.52	− 4.08	130 24 52.8	+14.7
	29	Taylor 660		9	55 4.98	− 1.25	− 28.41	80 2 7.12	+ 3 40.18	+ 5 34.6	1 54 35.32	− 4.06	131 17 43.1	+14.4
	30	B. A. C. 627		9	56 32.39	− 1.08	− 28.41	69 22 3.28	+ 2 46.75	+ 2 39.7	1 56 2.90	− 4.18	120 33 50.9	+16.2
	31	ξ[1] Ceti		9	7 18.66	− 0.65	**− 28.40**	30 32 1.35	+ 3 2.96	+ 35.7	2 6 49.61	. .	81 42 1.2	− 4.0
	32	Astræa		9	10 52.02	− 0.69	− 28.40	34 32 5.22	+ 2 51.32	+ 41.7	2 10 22.93	. .	85 41 59.4	− 3.2
	33	Anonymous	9.5	9	21 42.46	− 0.41	− 28.39	7 52 5.92	+ 4 19.01	+ 8.4	2 21 13.66	− 5.60	59 2 54.5	+22.6
	34	5 Ursæ Min., S. P.		9	28 12.36	− 2.71	− 28.38	295 6 8.68	+ 2 30.07	− 2 8.2	14 27 41.27	. .	346 12 51.8	− 2.7
	35	B. A. C. 818		9	34 12.84	− 1.20	− 28.37	77 16 7.62	+ 2 51.35	+ 4 23.1	2 33 43.27	− 4.06	128 29 43.3	+13.8
	36	γ[2] Ceti		9	37 45.04	− 0.71	**− 28.38**	36 4 3.95	+ 4 13.01	+ 44.2	2 37 15.96	. .	87 15 22.4	− 3.4
	37	B. A. C. 886		9	46 2.19	− 1.16	− 28.36	75 6 3.52	+ 3 34.52	+ 3 44.8	2 45 32.67	− 4.08	126 19 44.0	+13.7
	38	B. A. C. 902		9	49 30.73	− 1.21	− 28.36	77 40 9.62	+ 3 55.86	+ 4 32.1	2 49 1.16	− 4.04	128 54 58.8	+13.3
	39	B. A. C. 924		9	52 47.03	− 1.08	− 28.35	69 8 3.85	+ 2 31.29	+ 2 37.9	2 52 17.60	− 4.17	120 19 34.2	+14.1
	40	Neptune		9	1 43.99	− 0.58	− 28.35	23 36 1.52	+ 2 52.54	+ 26.5	3 1 15.06	. .	74 45 41.8	. .
	41	ζ Arietis		9	8 41.38	− 0.52	**− 28.31**	18 14 2.72	+ 2 34.56	+ 20.0	3 8 12.52	. .	69 23 18.5	− 3.1
	42	α Persei (R)		.	. . . .	. .	. .	190 30 7.92	+ 2 41.19	+ 11.3	. . . .	. .	40 33 20.8	− 0.8
	43	α Persei		.	. . . .	. .	. .	349 24 4.20	+ 3 4.23	− 11.3	3 16.0	. .	40 33 18.3	− 3.3
	44	Saturn I, N.		3	23 48.58	− 0.57	− 28.32	22 44 2.32	+ 3 19.86	+ 25.4	3 23 19.69	+ 0.68	73 54 8.8	. .
	45	Saturn II, S.		8	23 49.95	− 0.57	− 28.32	22 44 2.32	+ 3 39.91	+ 25.4	3 23 21.06	− 0.69	73 54 28.8	. .
	46	Irene		9	26 47.39	− 0.63	− 28.32	28 18 6.85	+ 3 20.36	+ 32.7	3 26 18.44	. .	79 28 21.1	− 2.3
	47	Eunomia		9	38 7.87	− 0.32	− 28.31	1 20 5.68	+ 1 58.07	+ 1.4	3 37 39.24	. .	52 28 26.4	− 0.1
	48	η Tauri		9	41 2.60	− 0.49	**− 28.33**	15 6 1.95	+ 2 44.45	+ 16.4	3 40 33.80	. .	66 15 24.0	− 3.2
	49	Lalande 14734		9	28 30.77	− 0.56	− 28.19	26 16 6.95	+ 3 36.10	+ 30.2	7 28 2.02	− 4.48	77 26 34.4	−12.9
	50	α Canis Minoris		9	33 40.48	− 0.63	**− 28.17**	33 18 7.98	+ 3 23.24	+ 40.2	7 33 11.65	. .	84 28 32.6	− 4.1

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
26	30.19	39.8	35.3
48	30.20	38.2	34.7

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

″

39. One bisection. 1 to 48 + 55.42

25. Three bisections. 49 to 50 + 56.35

32, 40, 47, 49. Four bisections.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
40	− 0.1	. .	.	− 0.1
44	− 0.4	+ 10.0	.	+ 9.6
45	− 0.4	− 10.0	.	− 10.4

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Nov. 15, W.	1	β Geminorum . .	.	9	38 39.06	— 0.38	— **28.20**	10 32 9.20	+ 2 57.78	+ 11.4	7 38 10.50	. .	61 41 39.6	— 3.4
	2	λ Ursæ Min., S. P.	.	3	41 22.60	—30.58	— 28.18	307 48 7.52	+ 4 15.37	— 1 18.4	19 40 23.84	. .	358 57 25.7	— 0.6
	3	Anonymous . .	9.8	9	48 53.41	— 0.67	— 28.18	36 50 9.65	+ 3 0.38	+ 45.8	7 48 24.56	— 4.13	88 0 17.0	—11.5
	4	B. A. C. 6905, S. P.	.	9	0 43.36	— 1.78	— 28.17	283 24 7.72	+ 3 40.03	— 4 10.2	20 0 13.41	+ 0.21	334 29 58.8	—34.6
	5	B. A. C. 3146 .	.	9	8 46.01	— 0.66	— 28.12	36 0 9.48	+ 4 18.28	+ 44.5	9 8 17.23	— 3.69	87 11 33.5	—16.8
	6	α Hydræ . . .	.	9	22 19.74	— 0.77	— **28.16**	46 58 . .	. . . .	. .	9 21 50.86	. .	81 51 . .	. .
	7	Comet 1882 II .	.	11	28 19.74	— 0.96	— 28.11	63 38 9.72	+ 2 45.02	+ 2 2.9	9 27 50.67	. .	114 49 18.8	. .
	8	ε Leonis . . .	.	9	39 41.39	— 0.43	— **28.14**	14 30 9.38	+ 4 38.11	+ 15.9	9 39 12.86	. .	65 41 24.6	— 0.4
	9	μ Leonis . . .	.	9	46 35.20	— 0.40	— **28.09**	12 16 7.45	+ 3 59.52	+ 13.4	9 46 6.70	. .	63 26 41.6	— 1.9
	10	32 Ursæ Majoris .	.	9	9 58.60	+ 0.55	— 28.08	333 8 3.98	+ 4 55.19	— 30.8	10 9 31.07	. .	24 18 49.6	— 3.0
	11	γ¹ Leonis . . .	.	9	13 59.80	— 0.47	— **27.99**	18 24 5.70	+ 3 18.87	+ 20.4	10 13 31.25	. .	69 34 6.2	— 2.7
16, S.	12	θ Aquarii . . .	.	9	11 8.29	— 0.97	— **27.29**	47 12 11.00	+ 2 9.44	+ 1 4.2	22 10 40.02	. .	98 21 45.8	— 3.1
	13	π Aquarii . . .	.	9	19 46.87	— 0.86	— **27.32**	38 2 4.40	+ 3 32.87	+ 46.6	22 19 18.71	. .	89 12 45.1	— 2.5
	14	9 Draconis, S. P.	.	9	25 35.84	— 3.09	— 27.30	295 12 4.28	+ 2 10.53	— 2 5.5	10 25 5.45	. .	346 18 30.5	— 0.7
	15	226 Cephei . . .	.	9	30 41.40	+ 1.41	— 27.30	323 13 58.32	+ 2 33.81	— 44.4	22 30 15.51	. .	14 22 8.9	— 1.8
	16	ζ Pegasi . . .	.	9	36 6.36	— 0.76	— **27.26**	28 36 2.40	+ 3 33.13	+ 32.5	22 35 38.30	. .	79 46 29.2	— 2.9
	17	74 Aquarii . . .	.	9	47 48.00	— 1.01	— 27.30	51 2 5.25	+ 4 30.98	+ 1 13.7	22 47 19.69	— 3.82	102 14 11.1	+23.8
	18	ι Piscium . . .	.	9	34 25.09	— 0.81	— **27.32**	33 50 8.30	+ 3 5.88	+ 40.0	23 33 56.98	. .	85 0 15.4	— 3.2
18, W.	19	Comet 1882 II .	.	11	21 31.18	— 0.95	— 25.80	64 32 8.68	+ 2 40.55	+ 2 8.3	9 21 4.43	. .	115 43 18.7	. .
	20	ο Leonis . . .	.	9	35 21.18	— 0.53	— 25.79	28 24 2.30	+ 3 37.97	+ 33.2	9 34 54.86	— 3.70	79 34 34.7	—21.0
	21	ε Leonis . . .	.	9	39 39.02	— 0.37	— **25.72**	14 30 7.28	+ 4 37.67	+ 15.9	9 39 12.86	. .	65 41 22.1	— 3.4
	22	μ Leonis . . .	.	9	46 32.93	— 0.34	— **25.77**	12 16 5.28	+ 4 4.57	+ 13.4	9 46 6.80	. .	63 26 44.4	+ 0.4
	23	79 Draconis, S. P.	.	9	51 54.81	— 2.56	— 25.79	292 0 8.28	+ 5 20.02	— 2 30.1	21 51 26.46	. .	343 9 19.4	— 2.4
	24	α Leonis . . .	.	9	2 35.06	— 0.51	— **25.82**	26 18 4.08	+ 2 47.74	+ 30.4	10 2 8.77	. .	77 27 43.4	— 3.3
	25	32 Ursæ Maj. (R)	.	.	. . . .	. .	. .	206 44 0.50	+ 2 56.91	+ 31.0	. . . .	. .	24 18 52.8	— 0.2
	26	32 Ursæ Majoris .	.	4	9 56.25	+ 0.68	— 25.78	333 8 4.80	+ 4 55.76	— 31.0	10 9 31.15	. .	24 18 50.8	— 2.2
	27	γ¹ Leonis . . .	.	9	13 57.68	— 0.42	— **25.82**	18 23 59.10	+ 3 26.12	+ 20.5	10 13 31.48	. .	69 34 6.9	— 2.6
	28	ρ Leonis . . .	.	9	27 5.50	— 0.54	— **25.77**	28 54 1.92	+ 4 30.78	+ 34.0	10 27 39.19	. .	80 5 27.9	— 6.4
	29	226 Cephei, S. P.	.	9	30 44.16	— 2.91	— 25.77	294 28 5.05	+ 5 35.37	— 2 13.6	22 30 15.48	. .	345 37 48.0	— 1.6
	30	ι Cephei, S. P.	.	9	46 0.69	— 1.91	— 25.76	284 28 2.52	+ 4 58.34	— 3 52.8	22 45 33.02	. .	335 35 29.3	— 1.2
	31	γ Corvi. . . .	.	9	10 13.72	— 0.84	— **25.71**	55 42 4.00	+ 3 26.82	+ 1 29.6	12 9 47.16	. .	106 53 21.6	— 3.6
	32	η Virginis . . .	.	.	. . . .	. .	. .	38 50 7.30	+ 3 37.35	+ 49.3	12 13.9	. .	90 0 55.1	— 2.3
	33	β Corvi. . . .	.	9	28 40.87	— 0.91	— **25.71**	61 32 2.25	+ 4 31.51	+ 1 52.6	12 28 14.24	. .	112 44 47.6	— 2.5
	34	α¹ Canum Venat. .	.	6	50 56.53	— 0.16	— 25.71	359 52 6.08	+ 4 49.82	— 0.1	12 50 30.66	— 1.71	51 3 17.0	—26.5
	35	α² Canum Venat. .	.	5	50 57.99	— 0.16	— **25.71**	359 52 6.08	+ 4 36.43	— 0.1	12 50 32.12	. .	51 3 3.6	— 1.7
	36	θ Virginis . . .	.	9	4 19.40	— 0.70	— **25.70**	43 44 1.12	+ 3 23.13	+ 58.2	13 3 53.00	. .	94 54 43.6	— 2.3
	37	Polaris, S. P. . .	.	6	17 47.48	—26.34	— 25.70	307 32 2.92	+ 4 11.91	— 1 18.7	1 16 55.44	. .	358 41 17.3	— 2.1
	38	α Virginis . . .	.	9	19 27.70	— 0.77	— **25.70**	49 22 5.68	+ 3 14.88	+ 1 10.8	13 19 1.24	. .	100 32 52.6	— 2.0
20, S.	39	θ Aquarii . . .	.	9	10 58.53	— 0.84	— **17.72**	47 12 2.35	+ 2 17.06	+ 1 4.7	22 10 39.96	. .	98 21 45.3	— 3.8
	40	π Aquarii . . .	.	9	19 37.05	— 0.71	— **17.71**	38 2 0.70	+ 3 35.36	+ 47.0	22 19 18.61	. .	89 12 44.3	— 3.5
	41	η Aquarii . . .	.	9	29 39.72	— 0.74	— **17.78**	39 32 1.30	+ 3 48.62	+ 49.6	22 29 21.25	. .	90 43 0.7	— 3.2
	42	ζ Pegasi . . .	.	9	35 56.60	— 0.60	— **17.72**	28 35 57.82	+ 3 38.11	+ 32.8	22 35 38.26	. .	79 46 29.9	— 2.4
	43	74 Aquarii . . .	.	9	47 38.28	— 0.88	— 17.74	51 1 59.45	+ 4 36.01	+ 1 14.4	22 47 19.66	— 3.76	102 14 11.1	+23.4
	44	Weisse 1047. .	.	9	52 17.78	— 0.88	— 17.74	50 33 57.42	+ 3 47.04	+ 1 13.1	22 51 59.16	— 3.78	101 45 18.8	+23.6
	45	Weisse 1079. .	.	9	53 45.28	— 0.91	— 17.74	52 30 0.95	+ 4 5.29	+ 1 18.3	22 53 26.63	— 3.79	103 41 45.7	+23.0
	46	Weisse 1156. .	.	8	56 43.78	— 0.88	— 17.74	50 42 1.62	+ 3 56.78	+ 1 13.5	22 56 25.16	— 3.80	101 53 33.1	+23.6
	47	Weisse 49 . .	.	9	5 42.06	— 0.87	— 17.74	49 58 0.08	+ 2 55.93	+ 1 11.5	23 5 23.45	— 3.83	101 8 28.7	+23.9
	48	Weisse 185 . .	.	9	11 52.97	— 0.89	— 17.75	51 10 2.85	+ 3 22.22	+ 1 14.7	23 11 34.33	— 3.86	102 21 1.0	+23.5
	49	Weisse 309 . .	.	9	17 15.70	— 0.87	— 17.75	50 13 58.40	+ 3 13.31	+ 1 12.3	23 16 57.08	— 3.88	101 24 45.2	+23.8
	50	Weisse 377 . .	.	9	20 51.49	— 0.86	— 17.75	49 30 1.62	+ 2 59.26	+ 1 10.5	23 20 32.88	— 3.90	100 40 32.6	+24.0

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
3	30.25	34.7	31.6
7	30.28	34.8	31.8
11	30.30	34.8	31.9
12	30.25	47.0	44.5
18	30.26	45.2	43.2
19	30.14	31.8	28.1
30	30.15	30.9	27.4
32	30.14	32.2	29.4
37	30.15	34.1	32.5
39	30.04	40.2	37.1

For summary of the constants of reduction see page 3.

27, 32, 36. One bisection.
37. Three bisections.
3. Four bisections.

ZENITH-POINT CORR.

	″
1 to 11	+ 56.35
12 to 18	+ 56.59
19 to 38	+ 56.26
39 to 50	+ 56.94

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
Nov.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
20, S.	1	Weisse 497		9	26 41.53	− 0.88	− 17.75	50 27 57.58	+ 3 2.48	+ 1 12.9	23 26 22.90	− 3.92	101 38 34.2	+23.7
	2	Weisse 571		9	29 43.80	− 0.87	− 17.75	50 0 11.25	+ 4 15.88	+ 1 11.8	23 29 25.18	− 3.93	101 12 0.1	+23.8
	3	Weisse 629		9	32 29.33	− 0.86	− 17.75	48 5 55.70	+ 2 58.52	+ 1 7.1	23 32 10.72	− 3.95	99 16 22.5	+23.9
	4	Groom. 4163		9	49 29.59	+ 1.61	− 17.76	325 5 59.40	+ 2 24.85	− 42.0	23 49 13.44	. .	16 14 3.4	− 2.1
	5	Moon I, S.		9	9 20.34	− 0.67	− 17.76	34 23 56.02	+ 3 12.10	+ 41.4	0 9 1.91	+68.27	85 34 10.7	. .
	6	12 Ceti		9	24 23.76	− 0.78	− 17.77	43 26 0.60	+ 2 47.54	+ 57.2	0 24 5.21	. .	94 36 6.5	− 2.7
	7	o Cassiopeæ (R)		.	. . . .	. .	. .	188 40 6.48	+ 4 59.33	+ 9.3	. . . .	. .	42 21 6.1	+35.7
	8	o Cassiopeæ		.	. . . .	. .	. .	351 12 5.48	+ 2 47.03	− 9.3	0 38.2	. .	42 21 4.4	+35.7
	9	Polaris		6	16 44.00	+28.47	− 17.78	310 9 58.92	+ 3 29.17	− 1 11.3	1 16 54.69	. .	1 18 38.0	− 2.1
	10	η Piscium		9	25 33.30	− 0.54	− 17.76	24 6 0.40	+ 2 29.54	+ 27.1	1 25 14.98	. .	75 15 18.2	− 2.2
	11	o Piscium		9	39 32.90	− 0.62	− 17.76	30 15 59.00	+ 2 49.53	+ 35.3	1 39 14.49	. .	81 25 45.0	− 3.5
	12	β Arietis		9	48 30.73	− 0.47	− 17.84	18 35 58.98	+ 3 1.34	+ 20.4	1 48 12.47	. .	69 45 41.9	− 2.8
W.	13	O. Arg. S. 8965		9	41 23.98	− 0.97	− 18.31	63 2 5.25	+ 4 32.06	+ 2 0.0	8 41 4.70	− 3.60	114 14 58.5	− 7.8
	14	12-Yr. Cat. 1879, S.P.		9	53 13.93	− 4.19	− 18.31	298 58 0.15	+ 4 39.45	− 1 49.7	20 52 51.43	. .	350 7 11.1	− 0.8
	15	κ Cancri		9	1 44.11	− 0.55	− 18.22	27 42 4.18	+ 2 47.96	+ 32.2	9 1 25.25	. .	78 51 45.5	− 2.5
	16	Comet 1882 II		11	16 38.21	− 1.00	− 18.30	65 6 8.18	+ 2 54.46	+ 2 11.5	9 16 18.91	. .	116 17 35.3	. .
	17	α Hydræ		9	22 10.07	− 0.77	− 18.32	46 58 . .	. . .	. .	9 21 51.00	. .	98 9 . .	. .
	18	ε Leonis		9	39 31.74	− 0.39	− 18.36	14 30 6.22	+ 4 38.55	+ 15.9	9 39 13.05	. .	65 41 21.9	− 4.0
	19	μ Leonis		9	46 25.56	− 0.36	− 18.31	12 16 5.40	+ 4 1.77	+ 13.4	9 46 6.90	. .	63 26 41.8	− 2.5
	20	Anonymous	8.8	9	54 7.92	− 0.91	− 18.29	58 26 1.80	+ 2 36.91	+ 1 39.5	9 53 48.72	− 3.39	109 36 39.4	−11.9
	21	α Leonis		8	2 27.61	− 0.53	− 18.29	26 18 4.48	+ 2 45.68	+ 30.3	10 2 8.79	. .	77 27 41.7	− 5.2
	22	32 Ursæ Maj. (R)		.	. . . .	. .	. .	206 44 4.70	+ 2 50.93	+ 30.9	. . . .	. .	24 18 54.7	+ 1.4
	23	32 Ursæ Majoris		.	. . . .	. .	. .	333 8 3.68	+ 4 58.92	− 30.9	10 9.5	. .	24 18 52.9	− 0.4
	24	μ Hydræ		9	20 45.54	− 0.87	− 18.29	55 2 2.02	+ 4 22.86	+ 1 27.6	10 20 26.38	− 3.31	106 14 13.7	−13.6
	25	9 Draconis		8	25 22.16	+ 1.88	− 18.29	322 32 1.08	+ 3 52.00	− 46.8	10 25 5.75	. .	13 41 27.5	− 2.0
	26	Polaris, S. P.		5	17 40.40	−27.62	− 18.24	307 32 6.82	+ 4 8.96	− 1 18.2	1 16 54.54	. .	358 41 18.8	− 1.2
	27	α Virginis		9	19 20.33	− 0.80	− 18.26	49 22 4.40	+ 3 16.46	+ 1 10.4	13 19 1.29	. .	100 32 52.5	− 2.4
	28	α Bootis		9	10 37.19	− 0.45	− 18.21	19 2 4.82	+ 3 38.64	+ 20.8	14 10 18.51	. .	70 12 25.5	− 1.2
21, S.	29	α Aquarii		9	0 5.80	− 0.78	− 18.18	39 41 59.68	+ 3 53.11	+ 49.5	21 59 46.87	. .	90 53 3.5	− 3.3
	30	θ Aquarii		9	10 58.96	− 0.88	− 18.12	47 12 2.72	+ 2 16.62	+ 1 4.4	22 10 39.93	. .	98 21 44.9	− 4.3
	31	π Aquarii		9	19 37.53	− 0.76	− 18.16	38 2 1.65	+ 3 34.47	+ 46.7	22 19 18.62	. .	89 12 44.0	− 3.9
	32	9 Draconis, S. P.		9	25 27.42	− 3.57	− 18.16	295 11 57.55	+ 2 15.82	− 2 6.0	10 25 5.69	. .	346 18 28.6	− 1.9
W.	33	η Aquarii		9	29 40.32	− 0.78	− 18.35	39 31 58.82	+ 3 49.95	+ 49.4	22 29 21.20	. .	90 42 59.4	− 4.6
	34	ζ Pegasi		9	35 57.29	− 0.63	− 18.39	28 36 2.75	+ 3 31.79	+ 32.6	22 35 38.31	. .	79 46 28.3	− 4.1
	35	Weisse 966		9	48 16.78	− 0.94	− 18.36	51 38 5.40	+ 2 50.27	+ 1 15.6	22 47 57.48	− 3.74	102 48 32.5	+23.1
	36	α Piscis Australis		9	51 30.99	− 1.21	− 18.27	69 2 2.95	+ 3 29.69	+ 2 35.4	22 51 11.41	. .	120 14 29.2	− 4.0
S.	37	Weisse 1079		9	53 45.72	− 0.95	− 18.16	52 30 5.20	+ 4 0.72	+ 1 18.1	22 53 26.61	− 3.77	103 41 45.2	+22.9
W.	38	Weisse 1156		9	56 44.28	− 0.92	− 18.37	50 42 0.22	+ 3 56.08	+ 1 13.2	22 56 24.99	− 3.78	101 53 30.7	+23.5
S.	39	Weisse 1204		9	58 41.61	− 0.94	− 18.16	51 38 4.60	+ 2 44.85	+ 1 15.7	22 58 22.51	− 3.79	102 48 26.3	+23.2
W.	40	Weisse 1249		9	1 10.54	− 0.94	− 18.38	52 10 0.95	+ 3 45.09	+ 1 17.2	23 0 51.22	− 3.80	103 21 24.4	+23.0
	41	Weisse 123		9	8 54.27	− 0.95	− 18.38	50 8 2.38	+ 3 45.11	+ 1 11.9	23 8 34.94	− 3.83	101 19 20.6	+23.7
S.	42	Weisse 185		9	11 53.47	− 0.93	− 18.16	51 10 4.85	+ 3 18.57	+ 1 14.5	23 11 34.38	− 3.84	102 20 59.1	+23.4
W.	43	Weisse 309		7	17 16.51	− 0.92	− 18.39	50 14 0.72	+ 3 9.71	+ 1 12.2	23 16 57.20	− 3.87	101 24 43.8	+23.7
S.	44	Weisse 427		9	23 17.36	− 0.90	− 18.17	48 43 59.48	+ 2 57.54	+ 1 8.5	23 22 58.29	− 3.89	99 54 26.7	+24.2
W.	45	Weisse 571		9	29 44.46	− 0.92	− 18.40	50 0 3.25	+ 4 22.89	+ 1 11.7	23 29 25.14	− 3.92	101 11 59.0	+23.7
	46	Weisse 629		9	32 29.97	− 0.89	− 18.41	48 5 58.05	+ 2 53.62	+ 1 7.0	23 32 10.67	− 3.94	99 16 19.9	+24.3
	47	ι Piscium		9	34 16.06	− 0.70	− 18.46	33 50 2.82	+ 3 10.90	+ 40.4	23 33 56.95	. .	85 0 15.3	− 3.5
	48	Groom. 4163		9	49 29.68	+ 1.66	− 18.42	325 6 2.68	+ 2 20.48	− 41.9	23 49 12.92	. .	16 14 2.5	− 2.8
S.	49	ω Piscium		9	53 38.14	− 0.69	− 18.17	32 35 59.68	+ 3 52.35	+ 38.6	23 53 19.28	. .	83 46 51.8	− 3.4
	50	α Andromedæ		9	2 40.37	− 0.37	− 18.15	10 23 56.95	+ 2 33.61	+ 11.1	0 2 21.83	. .	61 33 2.9	− 2.6

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
5	30.03	37.2	33.8
12	30.00	36.2	32.2
13	29.93	30.6	25.8
16	29.93	29.4	25.3
25	29.94	29.3	25.3
27	29.96	33.5	32.8
28	29.96	35.6	35.3
29	29.82	39.5	37.1
45	29.82	35.6	32.2

For summary of the constants of reduction see page 3.

	ZENITH-POINT CORR.
	″
21, 22, 23, 25. One bisection.	1 to 12 + 56.94
5, 9. Three bisections.	13 to 28 + 56.98
16, 20, 31, 49. Four bisections.	29 to 50 + 55.72

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	″
5	− 33 41.4	− 16 21.1	.	− 50 2.5

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
Nov.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
21, W.	1	γ Pegasi . . .	.	9	7 32.91	− 0.58	**− 18.41**	24 18 1.85	+ 2 56.26	+ 27.2	0 7 13.89	. .	75 27 46.5	− 3.7
S.	2	B. A. C. 79 (R) .	.	.	. . . .	. .	. .	192 24 3.58	+ 4 38.29	+ 13.3	. . . .	. .	38 37 26.0	+37.9
	3	B. A. C. 79 . .	.	.	. . . .	. .	. .	347 28 4.42	+ 3 11.77	− 13.3	0 18.0	. .	38 37 24.1	+37.9
	4	12 Ceti	.	9	24 24.21	− 0.83	**− 18.18**	43 26 3.90	+ 2 45.04	+ 57.1	0 24 5.20	. .	94 36 7.2	− 2.5
W.	5	α Cassiopeæ (R) .	.	.	. .	. .	. .	196 56 2.22	+ 4 3.13	+ 18.4	. . . .	. .	34 5 57.4	− 1.8
	6	α Cassiopeæ . .	.	8	34 13.08	+ 0.29	− 18.47	342 56 0.60	+ 3 54.10	− 18.4	0 33 54.90	. .	34 5 57.5	− 1.7
	7	β Ceti	.	9	38 3.58	− 1.02	**− 18.44**	57 26 0.60	+ 3 45.98	+ 1 34.4	0 37 44.09	. .	108 37 42.2	− 2.1
	8	δ Piscium . . .	.	9	42 57.11	− 0.68	− 18.47	31 52 2.85	+ 3 54.44	+ 37.6	0 42 37.96	− 4.41	83 2 56.1	+27.1
	9	D. M. +60°, 146	.	5	55 45.27	+ 0.52	− 18.49	337 54 3.45	+ 2 18.43	− 24.4	0 55 27.30	− 6.69	29 2 18.7	+35.6
	10	ε Piscium . . .	.	9	57 12.87	− 0.67	**− 18.54**	31 33 59.92	+ 3 15.66	+ 37.1	0 56 53.71	. .	82 44 13.9	− 3.4
S.	11	β Andromedæ . .	.	9	3 31.33	− 0.26	**− 18.20**	3 50 2.00	+ 3 18.37	+ 4.1	1 3 12.89	. .	54 59 45.7	− 2.2
W.	12	Moon I, S. .	.	9	6 57.68	− 0.64	− 18.50	29 26 1.48	+ 2 51.91	+ 34.1	1 6 38.54	+69.31	80 35 48.7	. .
	13	Polaris	.	5	16 42.68	+29.71	− 18.51	310 10 6.08	+ 3 21.85	− 1 11.3	1 16 53.88	. .	1 18 37.8	− 2.1
S.	14	Polaris	.	4	16 43.10	+29.71	− 18.18	310 10 5.92	+ 3 21.94	− 1 11.3	1 16 54.63	. .	1 18 37.8	− 2.1
W.	15	κ Cancri . . .	.	9	1 44.52	− 0.59	**− 18.56**	27 42 . .	. . . .	. .	9 1 25.29	. .	78 52 . .	. .
	16	Comet 1882 II .	.	11	14 11.10	− 1.12	− 18.64	65 24 4.80	+ 1 27.93	+ 2 11.8	9 13 51.34	. .	116 34 5.7	. .
	17	α Hydræ . . .	.	9	22 10.54	− 0.84	**− 18.69**	46 58 4.98	+ 3 34.11	+ 1 5.0	9 21 51.05	. .	98 9 5.3	− 1.6
	18	θ Ursæ Majoris .	.	9	25 20.86	+ 0.22	− 18.65	346 38 3.10	+ 3 33.93	− 14.3	9 25 2.43	. .	37 47 43.9	− 0.3
	19	ε Leonis . . .	.	9	39 32.11	− 0.40	**− 18.68**	14 30 4.62	+ 4 41.97	+ 15.8	9 39 13.06	. .	65 41 23.6	− 2.5
	20	μ Leonis . . .	.	9	46 25.96	− 0.36	**− 18.67**	12 16 1.32	+ 4 6.40	+ 13.3	9 46 6.94	. .	63 26 42.2	− 2.3
22, W.	21	O. Arg. S. 8965 .	.	9	41 25.29	− 0.98	− 19.23	63 2 7.65	+ 4 30.12	+ 2 0.2	8 41 5.08	− 3.66	114 14 59.2	− 8.3
	22	12-Yr. Cat. 1879, S. P.	.	9	53 13.79	− 4.30	− 19.23	298 58 3.70	+ 4 35.53	− 1 49.8	20 52 50.26	. .	350 7 10.6	− 1.2
	23	κ Cancri . . .	.	9	1 45.04	− 0.54	**− 19.09**	27 42 2.95	+ 2 49.23	+ 32.2	9 1 25.28	. .	78 51 45.6	− 2.8
	24	Comet 1882 II .	.	11	11 41.88	− 1.02	− 19.22	65 38 5.95	+ 3 29.11	+ 2 14.8	9 11 21.64	. .	116 50 11.1	. .
	25	Anonymous . .	9.1	9	16 43.16	− 1.01	− 19.22	65 6 2.35	+ 3 28.70	+ 2 11.5	9 16 22.93	− 3.52	116 18 3.7	− 9.1
	26	α Hydræ . . .	.	9	22 11.03	− 0.77	**− 19.22**	46 58 5.00	+ 3 32.66	+ 1 5.6	9 21 51.04	. .	98 9 4.5	− 2.6
	27	α Ursæ Majoris .	.	4	24 26.15	+ 1.13	− 19.22	328 30 5.80	+ 3 56.21	− 37.4	9 24 8.06	. .	19 39 45.8	− 1.3
	28	ε Leonis . . .	.	3	39 32.74	− 0.38	**− 19.30**	14 30 8.28	+ 4 39.49	+ 15.9	9 39 13.15	. .	65 41 24.9	− 1.4
	29	μ Leonis . . .	.	9	46 26.60	− 0.35	**− 19.29**	12 16 3.20	+ 4 5.49	+ 13.4	9 46 7.04	. .	63 26 43.3	− 1.4
	30	Anonymous . .	8.7	9	53 22.14	− 0.92	− 19.21	59 14 5.45	+ 3 40.75	+ 1 42.8	9 53 2.01	− 3.45	110 25 50.2	−12.0
	31	α Leonis . . .	.	9	2 28.59	− 0.53	**− 19.21**	26 18 2.35	+ 2 50.66	+ 30.3	10 2 8.85	. .	77 27 44.5	− 2.8
	32	32 Ursæ Maj. (R) .	.	.	. . . .	. .	. .	206 44 2.98	+ 2 52.23	+ 30.9	. . . .	. .	24 18 55.1	+ 1.5
	33	32 Ursæ Majoris .	.	5	9 50.23	+ 0.75	− 19.20	333 8 5.12	+ 4 56.65	− 30.9	10 9 31.78	. .	24 18 52.1	− 1.5
	34	γ^1 Leonis . . .	.	9	13 51.16	− 0.43	**− 19.16**	18 24 2.65	+ 3 24.12	+ 20.4	10 13 31.53	. .	69 34 8.4	− 1.8
	35	μ Hydræ . . .	.	9	20 46.46	− 0.85	− 19.20	55 2 4.90	+ 4 21.92	+ 1 27.7	10 20 26.41	− 3.37	106 14 15.7	−13.9
	36	ρ Leonis (R) . .	.	.	. . . .	. .	. .	150 58 8.82	+ 3 9.99	− 33.9	. . . .	. .	80 5 36.3	+ 1.3
	37	ρ Leonis . . .	.	.	. . . .	. .	. .	28 54 1.45	+ 4 35.60	+ 33.9	10 26.7	. .	80 5 32.1	− 2.9
	38	41 Leonis Minoris .	.	9	37 22.93	− 0.39	− 19.19	15 2 5.78	+ 3 21.41	+ 16.5	10 37 3.35	− 3.40	66 12 4.9	−28.0
	39	γ Corvi	.	9	10 7.31	− 0.88	**− 19.14**	55 42 6.75	+ 3 26.26	+ 1 29.3	12 9 47.26	. .	106 53 23.5	− 2.2
	40	η Virginis . . .	.	9	14 14.78	− 0.68	**− 19.13**	38 50 9.62	+ 3 34.30	+ 49.1	12 13 54.93	. .	90 0 54.2	− 3.9
	41	α^2 Canum Venat. .	.	9	50 51.57	− 0.15	**− 19.19**	359 52 7.38	+ 4 36.03	− 0.1	12 50 32.27	. .	51 3 4.5	− 2.0
	42	Polaris, S. P. .	.	6	17 41.22	−28.43	− 19.15	307 32 9.40	+ 4 6.86	− 1 18.6	1 16 53.64	. .	358 41 18.9	− 1.7
	43	α Virginis . . .	.	9	19 21.29	− 0.80	− 19.17	49 22 3.65	+ 3 18.00	+ 1 10.7	13 19 1.34	. .	100 32 53.5	− 1.6
23, S.	44	θ Aquarii . . .	.	9	11 0.09	− 0.94	**− 19.21**	47 12 6.95	+ 2 15.47	+ 1 3.5	22 10 39.96	. .	98 21 47.1	− 2.2
W.	45	9 Draconis, S. P. .	.	9	25 28.98	− 3.30	− 19.31	295 12 6.48	+ 2 4.61	− 2 4.2	10 25 6.37	. .	346 18 28.1	− 2.1
	46	η Aquarii . . .	.	9	29 41.34	− 0.84	**− 19.33**	39 32 0.58	+ 3 52.20	+ 48.7	22 29 21.19	. .	90 43 2.7	− 1.4
S.	47	226 Cephei . . .	.	5	30 34.08	+ 1.68	− 19.18	323 13 58.60	+ 2 32.24	− 43.9	22 30 16.58	. .	14 22 8.1	− 1.9
	48	ζ Pegasi . . .	.	9	35 58.17	− 0.70	**− 19.22**	28 36 . .	. . . .	. .	22 35 38.29	. .	79 47 . .	. .
W.	49	Weisse 966 . .	.	9	48 17.70	− 0.99	− 19.31	51 37 58.98	+ 3 0.30	+ 1 14.4	22 47 57.40	− 3.71	102 48 34.9	+23.0
	50	α Piscis Australis .	.	9	51 32.08	− 1.26	**− 19.34**	69 1 57.60	+ 3 40.16	+ 2 33.0	22 51 11.51	. .	120 14 32.0	− 1.3

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
13	29.84	34.3	30.4
16	29.88	32.2	29.4
20	29.90	31.9	28.6
21	30.06	31.3	27.4
25	30.06	30.7	27.4
38	30.06	29.8	26.7
43	30.06	33.9	32.0
44	29.91	46.4	44.2

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

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34. One bisection. 1 to 14 + 55.72
14. Three bisections. 16 to 20 + 56.80
4, 24, 30. Four bisections. 21 to 43 + 56.32
12. Five bisections. 44 to 50 + 56.26

20. Barometer and thermometers read at $9^h\ 53^m$.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
12	− 29 20.8	− 16 23.3	.	− 45 44.1

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
Nov.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
23, S.	1	Weisse 1079		9	53 46.69	− 1.00	− 19.18	52 29 58.98	+ 4 7.61	+ 1 16.8	22 53 26.51	− 3.74	103 41 44.6	+22.7
W.	2	Weisse 1156		9	56 45.30	− 0.98	− 19.31	50 42 3.72	+ 3 55.42	+ 1 12.0	22 56 25.01	− 3.75	101 53 32.3	+23.4
S.	3	Weisse 1204		9	58 42.53	− 0.99	− 19.18	51 38 3.18	+ 2 47.70	+ 1 14.4	22 58 22.36	− 3.76	102 48 26.5	+23.0
W.	4	Weisse 1249		9	1 11.46	− 1.00	− 19.31	52 10 0.48	+ 3 48.29	+ 1 15.9	23 0 51.15	− 3.77	103 21 25.9	+22.9
S.	5	Weisse 49		9	5 43.50	− 0.97	− 19.17	49 57 59.52	+ 2 57.55	+ 1 10.2	23 5 23.36	− 3.79	101 8 28.5	+23.6
W.	6	Weisse 123		9	8 55.19	− 0.97	− 19.31	50 8 1.28	+ 3 49.35	+ 1 10.6	23 8 34.91	− 3.80	101 19 22.4	+23.6
	7	Lalande 45504		8	9 35.46	− 0.98	− 19.31	51 0 2.20	+ 4 25.90	+ 1 12.9	23 9 15.17	− 3.80	102 12 2.3	+23.3
	8	Weisse 185		9	11 54.54	− 0.99	− 19.31	51 10 4.72	+ 3 21.25	+ 1 13.3	23 11 34.24	− 3.81	102 21 0.5	+23.2
S.	9	Weisse 265		9	15 8.17	− 0.97	− 19.17	49 58 0.60	+ 4 43.06	+ 1 10.3	23 14 48.03	− 3.83	101 10 15.2	+23.6
W.	10	Weisse 315		9	17 34.10	− 0.96	− 19.31	48 50 3.18	+ 3 56.72	+ 1 7.5	23 17 13.83	− 3.84	100 1 28.6	+24.0
S.	11	Weisse 402		7	22 20.71	− 0.98	− 19.17	50 53 57.40	+ 3 58.53	+ 1 12.6	23 22 0.56	− 3.86	102 5 29.7	+23.3
W.	12	Weisse 427		9	23 18.57	− 0.95	− 19.32	48 44 3.22	+ 2 56.85	+ 1 7.3	23 22 58.30	− 3.87	99 54 28.6	+24.0
	13	Weisse 571		9	29 45.36	− 0.97	− 19.32	50 0 0.48	+ 4 28.66	+ 1 10.4	23 29 25.07	− 3.89	101 12 0.7	+23.5
S.	14	Weisse 586		8	30 18.78	− 0.95	− 19.17	48 13 56.32	+ 3 13.48	+ 1 6.1	23 29 58.66	− 3.90	99 24 37.1	+24.1
	15	ι Piscium		9	34 16.76	− 0.77	**− 19.11**	33 50 3.62	+ 3 11.49	+ 39.6	23 33 56.82	. .	85 0 15.9	− 3.0
W.	16	Groom. 4163		9	49 30.64	+ 1.39	− 19.32	325 6 . .	. . .	. . .	23 49 12.71	. .	16 14 . .	. .
	17	ω Piscium		9	53 39.28	− 0.75	**− 19.27**	32 35 58.50	+ 3 55.30	+ 37.9	23 53 19.21	. .	83 46 52.9	− 2.4
S.	18	α Andromedæ		9	2 41.39	− 0.46	**− 19.11**	10 24 3.45	+ 2 27.24	+ 10.9	0 2 21.77	. .	61 33 2.8	− 2.6
W.	19	γ Pegasi		9	7 33.89	− 0.65	**− 19.34**	24 18 0.35	+ 2 59.46	+ 26.8	0 7 13.92	. .	75 27 47.8	− 2.5
S.	20	B. A. C. 79 (R)		.	. . . .	. .	. .	192 24 1.45	+ 4 12.13	+ 13.1	. . . .	. .	38 37 24.5	+38.1
	21	B. A. C. 79		9	18 18.98	+ 0.01	− 19.15	347 28 0.32	+ 3 14.65	− 13.1	0 17 59.84	− 5.26	38 37 23.1	+38.1
	22	12 Ceti		9	24 25.21	− 0.89	**− 19.14**	43 26 0.45	+ 2 48.58	+ 56.1	0 24 5.17	. .	94 36 6.3	− 3.1
W.	23	B. A. C. 166 (R)		.	. . . .	. .	. .	171 16 5.08	+ 3 52.28	− 9.0	. . . .	. .	59 46 32.8	+33.3
	24	B. A. C. 166		6	33 25.84	− 0.43	− 19.33	8 36 3.02	+ 3 56.98	+ 9.0	0 33 6.08	− 4.74	59 46 30.2	+33.3
	25	β Ceti		9	38 4.48	− 1.07	**− 19.31**	57 25 59.70	+ 3 47.90	+ 1 32.7	0 37 44.08	. .	108 37 41.5	− 3.1
S.	26	ε Piscium		9	57 13.60	− 0.74	**− 19.21**	31 34 2.70	+ 3 14.16	+ 36.5	0 56 53.72	. .	82 44 14.6	− 2.8
W.	27	β Andromedæ		9	3 32.70	− 0.35	− 19.33	3 50 1.62	+ 3 17.20	+ 4.0	1 3 13.02	. .	54 59 44.0	3.7
	28	Polaris		5	16 45.84	+26.57	− 19.34	310 10 5.22	+ 3 20.40	− 1 10.0	1 16 53.07	. .	1 18 36.8	− 2.5
S.	29	Polaris		5	16 46.36	+26.57	− 19.14	310 10 4.75	+ 3 20.58	− 1 10.0	1 16 53.79	. .	1 18 36.5	− 2.8
W.	30	Polaris, S. P.		8	17 40.68	−26.23	− 19.70	307 32 4.58	+ 4 9.72	− 1 16.7	1 16 54.75	. .	358 41 18.8	− 2.0
	31	ζ Virginis		9	29 3.87	− 0.76	**− 19.76**	38 48 2.38	+ 4 33.94	+ 47.7	13 28 43.40	. .	89 59 45.2	− 1.5
	32	η Ursæ Majoris		9	43 14.01	− 0.02	− 19.72	348 55 59.55	+ 4 5.84	− 11.5	13 42 54.27	. .	40 6 15.1	− 0.9
	33	η Bootis		9	49 26.22	− 0.54	**− 19.69**	19 50 3.00	+ 4 8.12	+ 21.4	13 49 5.96	. .	71 0 53.7	− 1.4
	34	α Draconis		9	1 29.53	+ 0.54	− 19.73	333 54 0.52	+ 4 5.93	− 28.9	14 1 10.34	. .	25 3 58.7	− 2.3
	35	α Bootis		9	10 38.82	− 0.53	**− 19.71**	19 2 3.52	+ 3 40.17	+ 20.5	14 10 18.56	. .	70 12 25.4	− 2.1
	36	λ Bootis		9	12 14.42	− 0.10	− 19.73	352 14 0.68	+ 2 15.05	− 8.0	14 11 54.59	− 0.59	43 22 28.9	−20.8
	37	Mercury C.		9	11 19.68	− 0.96	− 19.77	55 31 59.55	+ 4 25.49	+ 1 26.2	15 10 58.95	− 0.01	106 44 12.4	. .
24	38	Sun I, N.		9	0 17.88	− 1.01	− 19.81	59 9 59.48	+ 4 32.69	+ 1 39.0	15 59 57.06	+69.60	110 22 32.4	. .
	39	Sun II, S.		9	2 37.09	− 1.01	− 19.81	59 42 3.10	+ 4 55.66	+ 1 41.2	16 2 16.27	−69.61	110 55 1.2	. .
	40	α^2 Capricorni		9	11 54.31	− 0.91	**− 19.94**	51 43 56.50	+ 2 42.23	+ 1 15.6	20 11 33.43	. .	102 54 15.5	− 1.3
	41	γ Cygni		9	18 21.70	− 0.24	**− 19.96**	358 57 46.20	+ 2 34.92	− 1.0	20 18 1.48	. .	50 6 41.3	− 0.4
	42	ε Delphini		9	27 57.80	− 0.64	**− 19.91**	27 56 0.40	+ 2 27.86	+ 31.8	20 27 37.18	. .	79 5 21.3	1.6
	43	α Cygni		9	37 46.62	− 0.14	**− 20.10**	353 57 56.62	+ 3 40.44	− 6.3	20 37 26.49	. .	45 7 52.0	− 0.3
	44	μ Aquarii		9	46 41.31	− 0.87	**− 19.98**	48 13 58.45	+ 3 42.46	+ 1 7.1	20 46 20.44	. .	99 25 9.2	− 1.2
	45	ν Cygni		9	53 8.90	− 0.22	**− 20.06**	358 7 58.82	+ 2 16.10	− 1.9	20 52 48.68	. .	49 16 34.2	− 2.4
S.	46	Weisse 966		9	48 18.09	− 0.89	− 19.89	51 37 59.65	+ 2 56.43	+ 1 16.2	22 47 57.31	− 3.70	102 48 33.5	+22.9
	47	α Piscis Australis		9	51 32.44	− 1.13	**− 19.84**	69 1 58.82	+ 3 35.01	+ 2 36.8	22 51 11.42	. .	120 14 31.8	− 1.6
W.	48	Weisse 1156		9	56 45.86	− 0.88	− 20.01	50 41 58.42	+ 3 58.83	+ 1 13.8	22 56 24.97	− 3.74	101 53 32.2	+23.3
S.	49	Weisse 1204		9	58 43.16	− 0.89	− 19.89	51 37 57.92	+ 2 51.34	+ 1 16.2	22 58 22.38	− 3.74	102 48 26.7	+23.0
W.	50	Weisse 1249		9	1 12.00	− 0.89	− 20.02	52 10 2.90	+ 3 43.75	+ 1 17.8	23 0 51.09	− 3.76	103 21 25.6	+22.8

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
20	29.91	44.7	41.2
28	29.90	43.2	39.7
31	29.99	40.8	42.3
39	30.00	43.3	43.3
40	30.10	41.2	40.1
45	30.13	40.3	38.6
46	30.18	38.5	36.2

For summary of the constants of reduction see page 3.

28. One bisection.

32, 33, 37. Four bisections.

ZENITH-POINT CORR.

	″
1 to 29	+ 56.26
30 to 45	+ 56.79
46 to 47	+ 56.84
48	+ 56.79
49	+ 56.84
50	+ 56.79

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
37	− 5.5	. . .	− 0.1	− 5.6
38	− 7.7	+ 16 14.3	.	+ 16 6.6
39	− 7.8	− 16 14.4	.	− 16 22.2

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
Nov.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
24, S.	1	Weisse 57[1]		6	6 13.82	− 0.88	− 19.90	51 21 59.32	+ 4 21.76	+ 1 15.6	23 5 53.04	− 3.78	102 33 57.9	+23.1
	2	Weisse 57[2]		5	6 14.12	− 0.88	− 19.90	51 21 59.32	+ 4 23.86	+ 1 15.6	23 5 53.34	− 3.78	102 34 0.0	+23.1
W.	3	Weisse 123		9	8 55.90	− 0.87	− 20.02	50 7 57.18	+ 3 51.77	+ 1 12.3	23 8 35.01	− 3.79	101 19 22.5	+23.5
	4	Weisse 226		9	13 14.10	− 0.86	− 20.02	49 4 0.18	+ 3 22.64	+ 1 9.7	23 12 53.22	− 3.81	100 14 53.7	+23.9
S.	5	Weisse 265		9	15 8.90	− 0.87	− 19.90	49 57 58.52	+ 4 42.27	+ 1 12.0	23 14 48.13	− 3.82	101 10 14.0	+23.5
W.	6	Weisse 315		9	17 34.71	− 0.85	− 20.02	48 50 4.22	+ 3 53.45	+ 1 9.1	23 17 13.84	− 3.83	100 1 28.0	+24.0
S.	7	Weisse 402		9	22 21.40	− 0.88	− 19.90	50 53 59.12	+ 3 53.14	+ 1 14.4	23 22 0.62	− 3.85	102 5 27.9	+23.2
W.	8	Weisse 427		9	23 19.17	− 0.85	− 20.02	48 44 2.35	+ 2 56.35	+ 1 8.9	23 22 58.30	− 3.86	99 54 28.8	+24.0
	9	Weisse 571		8	29 46.04	− 0.87	− 20.02	50 0 3.42	+ 4 22.19	+ 1 12.1	23 29 25.15	− 3.88	101 11 58.9	+23.4
S.	10	Weisse 586		9	30 19.50	− 0.85	− 19.90	48 13 57.48	+ 3 9.91	+ 1 7.7	23 29 58.75	− 3.89	99 24 36.3	+24.0
	11	ι Piscium		9	34 17.54	− 0.68	**− 19.99**	33 49 59.35	+ 3 14.67	+ 40.6	23 33 56.96	. .	85 0 15.8	− 3.2
W.	12	Groom. 4163 (R)		.	. . .	. . .	. . .	214 48 0.38	+ 3 32.38	+ 42.1	. . . .	. .	16 14 6.3	+ 1.5
	13	Groom. 4163		8	49 31.75	+ 1.40	− 20.02	325 5 56.88	+ 2 26.43	− 42.1	23 49 13.13	. .	16 14 2.4	− 2.4
S.	14	Groom. 4163		3	49 31.56	+ 1.40	− 19.90	325 6 . .	. . .	. .	23 49 13.06	. .	16 14 . .	. .
W.	15	ω Piscium		9	53 39.83	− 0.66	**− 19.92**	32 35 54.30	+ 3 57.10	+ 38.8	23 53 19.15	. .	83 46 51.4	− 4.0
	16	α Andromedæ		9	2 42.30	− 0.38	**− 20.11**	10 24 1.88	+ 2 27.65	+ 11.1	0 2 21.89	. .	61 33 1.8	− 3.6
S.	17	γ Pegasi		9	7 34.31	− 0.56	**− 19.86**	24 18 0.00	+ 2 59.73	+ 27.4	0 7 13.84	. .	75 27 48.3	− 2.0
	18	B. A. C. 79 (R)		.	. . .	. . .	. . .	192 23 57.48	+ 4 45.31	+ 13.4	. . . .	. .	38 37 25.0	+38.3
	19	B. A. C. 79		6	18 19.75	+ 0.06	− 19.91	347 28 2.62	+ 3 13.56	− 13.4	0 17 59.90	− 5.25	38 37 24.0	+38.3
W.	20	12 Ceti		9	24 25.97	− 0.79	**− 20.01**	43 26 3.55	+ 2 44.16	+ 57.4	0 24 5.15	. .	94 36 6.3	− 3.2
S.	21	κ Draconis, S. P.		9	28 48.30	− 2.39	− 19.91	289 18 0.32	+ 4 9.95	− 2 50.7	12 28 26.00	. .	340 25 40.8	− 2.0
W.	22	B. A. C. 166 (R)		.	. . .	. . .	. . .	171 16 6.22	+ 3 52.42	− 9.2	. . . .	. .	59 46 31.8	+33.4
	23	B. A. C. 166		4	33 26.40	− 0.36	− 20.03	8 36 1.42	+ 3 58.96	+ 9.2	0 33 6.01	− 4.74	59 46 30.8	+33.4
	24	β Ceti		9	38 5.12	− 0.96	**− 20.07**	57 26 1.78	+ 3 43.76	+ 1 34.8	0 37 44.13	. .	108 37 41.5	− 3.2
	25	70 Piscium		9	56 23.97	− 0.65	− 20.04	31 33 56.05	+ 0 20.98	+ 37.2	0 56 3.18	− 4.46	82 41 15.4	+26.4
	26	ε Piscium		9	57 14.36	− 0.65	− 20.04	31 33 56.05	+ 3 19.96	+ 37.3	0 56 53.67	. .	82 44 14.5	− 2.9
S.	27	β Andromedæ		9	3 33.06	− 0.28	**− 19.93**	3 50 4.25	+ 3 15.08	+ 4.1	1 3 12.86	. .	54 59 44.6	− 3.0
	28	Polaris		3	16 46.70	+25.99	− 19.92	310 10 3.05	+ 3 23.17	− 1 11.6	1 16 52.77	. .	1 18 35.8	− 3.2
W.	29	Polaris		5	16 48.80	+27.99	− 20.04	310 10 3.45	+ 3 23.79	− 1 11.6	1 16 54.75	. .	1 18 36.8	− 2.2
	30	Comet 1882 II		11	6 37.55	− 1.00	− 20.30	66 10 5.00	+ 2 41.63	+ 2 17.7	9 6 16.25	. .	117 21 25.5	. .
	31	Anonymous		3	16 44.51	− 0.99	− 20.31	65 6 5.72	+ 3 28.31	+ 2 11.2	9 16 23.21	− 3.59	116 18 6.4	− 9.6
	32	α Hydræ		9	22 12.27	− 0.76	**− 20.41**	46 58 5.55	+ 3 32.53	+ 1 5.5	9 21 51.19	. .	98 9 4.8	− 2.7
	33	θ Ursæ Majoris		9	25 22.66	+ 0.13	− 20.33	346 38 4.45	+ 3 31.12	− 14.4	9 25 2.46	. .	37 47 42.4	− 2.1
	34	ε Leonis		9	39 33.83	− 0.39	**− 20.31**	14 30 3.12	+ 4 44.61	+ 15.9	9 39 13.10	. .	65 41 24.8	− 1.8
	35	μ Leonis		9	46 27.69	− 0.35	**− 20.31**	12 16 2.08	+ 4 5.94	+ 13.4	9 46 6.99	. .	63 26 42.6	− 2.4
	36	Anonymous		9	53 23.37	− 0.91	− 20.36	59 14 2.68	+ 3 45.88	+ 1 42.6	9 53 2.10	− 3.52	110 25 52.4	−12.4
	37	α Leonis		9	2 29.83	− 0.53	**− 20.42**	26 18 3.32	+ 2 49.78	+ 30.3	10 2 8.92	. .	77 27 44.6	− 3.1
	38	32 Ursæ Majoris		9	9 51.22	+ 0.69	− 20.39	333 8 7.18	+ 4 53.96	− 30.8	10 9 31.52	. .	24 18 51.5	− 2.4
	39	ρ Leonis		9	27 0.31	− 0.56	**− 20.36**	28 54 . .	. . .	. .	10 26 39.34	. .	80 6 . .	. .
	40	Weisse 472		8	28 44.48	− 0.79	− 20.41	49 28 5.42	+ 4 28.24	+ 1 11.6	10 28 23.28	− 3.43	100 40 6.5	−16.2
	41	Weisse 481		5	28 59.36	− 0.79	− 20.41	49 28 5.42	+ 3 52.25	+ 1 11.6	10 28 38.16	− 3.42	100 39 30.5	−16.2
25, S.	42	9 Draconis, S. P.		5	25 29.56	− 2.49	− 20.51	295 12 5.20	+ 2 11.49	− 2 7.9	10 25 6.56	. .	346 18 30.0	+ 0.1
	43	η Aquarii		9	29 42.21	− 0.60	**− 20.47**	39 32 6.28	+ 3 43.66	+ 50.1	22 29 21.10	. .	90 43 1.2	− 3.0
W.	44	ζ Pegasi		9	35 59.37	− 0.50	**− 20.65**	28 36 3.62	+ 3 30.86	+ 33.1	22 35 38.21	. .	79 46 28.8	− 3.8
S.	45	ι Cephei		7	45 52.41	+ 0.50	− 20.52	333 16 0.78	+ 2 33.88	− 30.5	22 45 32.39	. .	24 24 25.4	− 3.6
W.	46	Weisse 966		9	48 18.79	− 0.71	− 20.67	51 38 3.62	+ 2 52.88	+ 1 16.7	22 47 57.41	− 3.69	102 48 34.4	+22.9
S.	47	α Piscis Australis		9	51 32.92	− 0.90	**− 20.57**	69 12 1.15	+ 3 30.01	+ 2 37.8	22 51 11.49	. .	120 14 30.2	− 3.3
	48	Weisse 1204		9	58 43.67	− 0.71	− 20.53	51 38 0.48	+ 2 46.59	+ 1 16.8	22 58 22.43	− 3.74	102 48 25.1	+22.9
W.	49	Weisse 1232		9	0 8.62	− 0.69	− 20.68	49 52 9.48	+ 4 19.09	+ 1 12.2	22 59 47.25	− 3.74	101 4 2.0	+23.6
S.	50	Weisse 1261		9	1 38.63	− 0.71	− 20.54	51 14 0.20	+ 4 35.97	+ 1 15.8	23 1 17.38	− 3.75	102 26 13.2	+23.1

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
20	30.20	37.1	34.8
29	30.20	37.1	34.1
32	30.26	33.7	31.8
41	30.27	33.8	31.2
42	30.32	38.2	36.2

For summary of the constants of reduction see page 3.

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″

ZENITH-POINT CORR.

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25, 33, 40, 41, 49 } One bisection. 1, 2, 5, 7, 10, 11, 17, 18, 19, 21, 27, 28 } + 56.84

29. Three bisections. 3, 4, 6, 8, 9, 12, 13, 15, 16, 20, 22, 23, 24, 25, 26, 29 } + 56.79

30 to 41 + 57.98

42, 43, 45, 47, 48, 50 + 56.75

44, 46, 49 + 56.28

Date and Obs'r.	Number.	Object.	Magnitude.	Threads.	Mean Thread.	Corrections. Inst.	Corrections. Clock.	Zenith Dist. South, from Circles.	Corrections. Instrument.	Corrections. Refraction.	Apparent Right Ascension.	Miscellaneous Correction.	Apparent North-Polar Distance.	Miscellaneous Correction.
Nov.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
25, W.	1	Weisse 57¹		6	6 14.13	− 0.71	− 20.68	51 22 8.08	+ 4 12.75	+ 1 16.2	23 5 52.74	− 3.77	102 33 58.0	+23.0
	2	Weisse 57²		5	6 14.40	− 0.71	− 20.68	51 22 8.08	+ 4 13.45	+ 1 16.2	23 5 53.07	− 3.77	102 33 58.9	+23.0
S.	3	Weisse 123		9	8 56.12	− 0.70	− 20.54	50 8 3.18	+ 3 43.95	+ 1 12.9	23 8 34.88	− 3.78	101 19 21.2	+23.5
W.	4	Lalande 45504		9	9 36.62	− 0.70	− 20.68	51 0 3.32	+ 4 21.68	+ 1 15.2	23 9 15.24	− 3.78	102 12 1.4	+23.2
S.	5	Weisse 226		9	13 14.52	− 0.68	− 20.55	49 4 1.38	+ 3 20.76	+ 1 10.2	23 12 53.29	− 3.80	100 14 53.5	+23.8
	6	Weisse 265		9	15 9.41	− 0.69	− 20.55	49 58 3.45	+ 4 36.87	+ 1 12.5	23 14 48.17	− 3.81	101 10 14.0	+23.5
W.	7	Weisse 315		9	17 35.18	− 0.68	− 20.69	48 50 7.95	+ 3 49.39	+ 1 9.7	23 17 13.81	− 3.82	100 1 28.2	+23.9
S.	8	Weisse 402		8	22 21.91	− 0.70	− 20.55	50 53 59.28	+ 3 53.42	+ 1 15.0	23 22 0.66	− 3.84	102 5 28.9	+23.2
W.	9	Weisse 427		9	23 19.68	− 0.68	− 20.69	48 44 3.15	+ 2 54.22	+ 1 9.4	23 22 58.31	− 3.85	99 54 28.0	+23.9
S.	10	Weisse 571		9	29 46.46	− 0.69	− 20.56	50 0 5.02	+ 4 20.20	+ 1 12.7	23 29 25.21	− 3.87	101 11 59.1	+23.4
W.	11	ι Piscium		9	34 18.11	− 0.54	**− 20.71**	33 50 6.82	+ 3 5.03	+ 40.9	23 33 56.87	. .	85 0 13.9	− 5.1
S.	12	ω Piscium		9	53 40.39	− 0.53	**− 20.62**	32 36 3.10	+ 3 48.72	+ 39.1	23 53 19.28	. .	83 46 52.1	− 3.3
W.	13	α Andromedæ		9	2 42.79	− 0.31	**− 20.68**	10 24 2.50	+ 2 27.26	+ 11.3	0 2 21.76	. .	61 33 2.3	− 3.1
S.	14	γ Pegasi		9	7 34.91	− 0.46	**− 20.57**	24 18 2.18	+ 2 55.81	+ 27.6	0 7 13.86	. .	75 27 46.8	− 3.5
W.	15	B. A. C. 79 (R)		.	. . .	. .	. .	192 24 5.60	+ 4 37.20	+ 13.5	. . . .	. .	38 37 24.9	+38.4
	16	B. A. C. 79		8	18 20.52	+ 0.03	− 20.73	347 28 4.40	+ 3 12.26	− 13.5	0 17 59.82	− 5.24	38 37 24.4	+38.4
	17	12 Ceti		9	24 26.50	− 0.63	**− 20.71**	43 26 1.88	+ 2 45.49	+ 57.9	0 24 5.14	. .	94 36 6.5	− 3.1
S.	18	o Cassiopeæ (R)		.	. . .	. .	. .	188 42 11.58	+ 2 54.32	+ 9.4	. . . .	. .	42 21 5.9	+36.4
	19	o Cassiopeæ		6	38 35.25	− 0.04	− 20.61	351 12 6.98	+ 2 46.39	− 9.4	0 38 14.60	− 5.37	42 21 5.2	+36.4
W.	20	δ Piscium		9	42 59.28	− 0.53	− 20.74	31 52 5.60	+ 3 51.33	+ 38.1	0 42 38.01	− 4.38	83 2 56.2	+27.0
	21	32¹ Camelop., S. P.		6	48 24.66	− 5.09	− 20.75	302 54 1.15	+ 4 7.66	− 1 34.2	12 47 58.82	+11.17	354 2 55.8	+36.9
	22	32² Camelop., S. P.		5	48 32.24	− 5.09	− 20.75	302 54 1.15	+ 3 50.10	− 1 34.2	12 48 6.40	. .	354 2 38.2	− 0.4
	23	70 Piscium		9	56 24.43	− 0.52	− 20.75	31 34 2.15	+ 0 16.18	+ 37.6	0 56 3.16	− 4.45	82 41 17.1	+26.3
	24	ε Piscium		9	57 14.96	− 0.52	**− 20.81**	31 34 2.15	+ 3 13.35	+ 37.7	0 56 53.69	. .	82 44 14.4	− 3.0
S.	25	β Andromedæ		9	3 33.69	− 0.24	**− 20.61**	3 50 5.50	+ 3 13.71	+ 4.2	1 3 12.82	. .	54 59 44.6	− 2.9
W.	26	Polaris		5	16 52.10	+20.21	− 20.77	310 10 8.42	+ 3 18.19	− 1 12.5	1 16 51.54	. .	1 18 35.3	− 3.4
S.	27	Polaris		5	16 54.18	+20.21	− 20.64	310 10 8.80	+ 3 19.69	− 1 12.4	1 16 53.75	. .	1 18 37.3	− 1.4
26, W.	28	η Bootis		9	49 28.17	− 0.51	**− 21.61**	19 50 8.25	+ 4 1.84	+ 21.6	13 49 6.09	. .	71 0 52.9	− 3.0
	29	α Bootis		9	10 40.73	− 0.50	**− 21.59**	19 2 4.88	+ 3 38.56	+ 20.6	14 10 18.65	. .	70 12 25.2	− 3.1
	30	λ Bootis		9	12 16.34	− 0.14	− 21.58	352 14 0.22	+ 2 17.78	− 8.1	14 11 54.62	− 0.66	43 22 31.1	−21.8
	31	β Bootis		9	21 32.56	− 0.01	− 21.59	346 26 5.15	+ 4 21.42	− 14.3	14 21 10.96	. .	37 36 33.5	− 0.7
	32	ρ Bootis		9	27 8.08	− 0.38	**− 21.54**	7 56 3.98	+ 4 20.11	+ 8.4	14 26 46.11	. .	59 6 53.7	+ 0.5
	33	Mercury C		9	29 57.79	− 0.90	− 21.63	57 4 3.78	+ 4 18.46	+ 1 31.8	15 29 35.26	− 0.01	108 16 15.2	. .
27	34	Sun I, N.		9	13 5.94	− 0.93	− 21.65	59 46 1.45	+ 2 35.59	+ 1 41.7	16 12 43.36	+69.88	110 56 39.9	. .
	35	Sun II, S.		9	15 25.71	− 0.93	− 21.65	60 18 6.60	+ 2 59.98	+ 1 44.0	16 15 3.13	−69.89	111 29 11.8	. .
	36	Venus I, N.		9	13 42.48	− 0.98	− 21.68	64 12 6.32	+ 3 32.54	+ 2 2.6	17 13 19.82	+ 2.26	115 24 2.7	. .
	37	η Serpentis		9	15 37.14	− 0.73	**− 21.77**	41 44 2.85	+ 4 13.47	+ 53.0	18 15 14.69	. .	92 55 30.5	− 0.4
	38	1 Aquilæ		9	29 12.20	− 0.79	**− 21.67**	47 8 9.88	+ 3 43.12	+ 1 4.0	18 28 49.68	. .	98 19 18.2	− 2.5
	39	α Lyræ		9	33 19.54	− 0.27	**− 21.74**	0 10 7.58	+ 2 42.75	+ 0.2	18 32 57.54	. .	51 19 11.7	− 1.3
S.	40	π Aquarii		9	19 40.93	− 0.66	**− 21.74**	38 2 4.95	+ 3 33.20	+ 47.2	22 19 18.51	. .	89 12 46.6	− 1.6
	41	9 Draconis, S. P.		9	25 30.94	− 2.78	− 21.76	295 12 3.38	+ 2 10.72	− 2 7.2	10 25 6.40	. .	346 18 28.1	− 1.6
	42	η Aquarii		9	29 43.51	− 0.68	**− 21.72**	39 32 2.80	+ 3 48.49	+ 49.8	22 29 21.07	. .	90 43 2.3	− 2.0
	43	ζ Pegasi		9	36 0.42	− 0.56	**− 21.67**	28 36 1.05	+ 3 34.46	+ 32.9	22 35 38.09	. .	79 46 29.6	− 3.1
	44	Weisse 966		9	48 19.89	− 0.80	− 21.77	51 38 3.58	+ 2 52.89	+ 1 16.2	22 47 57.32	− 3.68	102 48 33.9	+22.8
W.	45	α Piscis Australis		9	51 34.54	− 1.02	**− 22.10**	69 2 5.48	+ 3 26.52	+ 2 36.7	22 51 11.40	. .	120 14 29.9	− 3.8
	46	Weisse 1079		9	53 49.34	− 0.81	− 22.12	52 30 3.02	+ 4 2.81	+ 1 18.6	22 53 26.41	− 3.70	103 41 45.6	+22.5
	47	Weisse 1232		8	0 10.07	− 0.78	− 22.10	49 52 4.80	+ 4 23.03	+ 1 11.7	22 59 47.19	− 3.73	101 4 0.7	+23.5
S.	48	Weisse 1249		.	. . .	. .	. .	52 10 3.65	+ 3 43.01	+ 1 17.8	23 0.9	. .	103 21 25.7	+22.7
	49	Weisse 1261		.	. . .	. .	. .	51 14 2.35	+ 4 32.72	+ 1 15.2	23 1.3	. .	102 26 11.5	+23.0
	50	Weisse 57¹		6	6 15.58	− 0.80	− 21.78	51 22 7.05	+ 4 14.70	+ 1 15.6	23 5 53.00	− 3.75	102 33 58.6	+23.0

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
11	30.30	36.2	33.3
25	30.30	34.2	30.5
27	30.30	33.9	30.0
28	30.03	39.8	39.8
35	30.07	42.3	41.8
39	30.09	43.9	42.8
46	30.19	38.8	36.6

For summary of the constants of reduction see page 3.

26, 27. Three bisections. 1, 2, 4, 7, 9, 11, 13, 15, 16, 17, 20, 21, 22, 23, 24, 26 } + 56.28

12, 33, 36, 40. } Four bisections. 3, 5, 6, 8, 10, 12, 14, 18, 19, 25, 27 } + 56.75

28 to 39, 45, 46, 47 + 56.40

40 to 44, 48 to 50 + 56.36

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
33	− 5.4	. .	0.0	− 5.4
34	− 7.8	+ 16 15.9	. .	+ 16 8.1
35	− 7.8	− 16 16.0	. .	− 16 23.8
36	− 28.7	+ 30.9	. .	+ 2.2

ZENITH-POINT CORR.

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DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Nov.														
27, S.	1	Weisse 57[a]	.	5	6 15.90	— 0.80	— 21.78	51 22 7.05	+ 4 15.95	+ 1 15.6	23 5 53.32	— 3.75	102 33 59.8	+23.0
W.	2	Weisse 123	.	9	8 57.66	— 0.78	— 22.09	50 7 59.50	+ 3 49.80	+ 1 12.3	23 8 34.79	— 3.76	101 19 22.8	+23.4
	3	Lalande 45504	.	9	9 38.10	— 0.80	— 22.09	51 0 6.55	+ 4 19.10	+ 1 14.6	23 9 15.21	— 3.77	102 12 1.4	+23.1
	4	Weisse 228	.	9	13 19.31	— 0.80	— 22.08	51 38 2.55	+ 2 49.92	+ 1 16.3	23 12 56.43	— 3.78	102 48 30.0	+22.9
S.	5	Weisse 265	.	9	15 10.73	— 0.78	— 21.79	49 58 4.50	+ 4 38.62	+ 1 12.0	23 14 48.16	— 3.79	101 10 16.3	+23.4
W.	6	Weisse 315	.	9	17 36.49	— 0.77	— 22.07	48 50 3.25	+ 3 54.74	+ 1 9.1	23 17 13.65	— 3.81	100 1 28.3	+23.8
	7	Weisse 402	.	9	22 23.42	— 0.79	— 22.06	50 54 0.62	+ 3 52.47	+ 1 14.4	23 22 0.57	— 3.82	102 5 28.7	+23.0
S.	8	Weisse 427	.	9	23 20.98	— 0.77	— 21.79	48 44 1.12	+ 2 56.71	+ 1 8.9	23 22 58.42	— 3.83	99 54 27.9	+23.8
W.	9	Weisse 571	.	9	29 47.94	— 0.78	— 22.05	50 0 4.70	+ 4 22.03	+ 1 12.1	23 29 25.11	— 3.86	101 12 0.0	+23.3
	10	ι Piscium	.	9	34 19.51	— 0.62	**— 22.05**	33 50 5.98	+ 3 8.47	+ 40.6	23 33 56.86	. .	85 0 16.2	- - 2.9
	11	Groom. 4163 (R)	.	.	. . . .	. .	. .	214 48 0.18	+ 3 34.74	+ 42.1	. . . . .	. .	16 14 4.2	— 0.1
	12	Groom. 4163	.	9	49 33.59	+ 1.20	— 22.00	325 6 0.05	+ 2 23.63	— 42.1	23 49 12.79	. .	16 14 2.8	— 1.5
S.	13	ω Piscium	.	9	53 41.68	— 0.60	**— 21.86**	32 36 5.10	+ 3 47.29	+ 38.8	23 53 19.28	. .	83 46 52.4	— 3.1
W.	14	α Andromedæ	.	9	2 44.07	— 0.36	**— 21.94**	10 24 4.15	+ 2 25.88	+ 11.2	0 2 21.73	. .	61 33 2.4	— 2.9
S.	15	γ Pegasi	.	9	7 36.17	— 0.52	**— 21.79**	24 18 3.68	+ 2 55.53	+ 27.4	0 7 13.84	. .	75 27 47.8	— 2.6
W.	16	12 Ceti	.	9	24 27.78	— 0.72	**— 21.92**	43 26 7.32	+ 2 40.72	+ 57.5	0 24 5.12	. .	94 36 6.7	— 3.0
S.	17	B. A. C. 166 (R)	.	.	. . . .	. .	. .	171 16 4.75	+ 3 53.27	— 9.2	. . . . .	. .	59 46 32.4	+33.6
	18	B. A. C. 166	.	.	. . . .	. .	. .	8 36 4.68	+ 3 55.02	+ 9.2	0 33.1	. .	59 46 30.1	+33.6
	19	β Ceti	.	9	38 6.78	— 0.87	**— 21.85**	57 26 3.32	+ 3 42.72	+ 1 35.0	0 37 44.08	. .	108 37 42.2	— 2.9
W.	20	ε Piscium	.	9	57 16.20	— 0.59	**— 21.99**	31 34 5.15	+ 3 10.13	+ 37.4	0 56 53 72	. .	82 44 13.9	— 3.6
S.	21	β Andromedæ	.	9	3 35.01	— 0.27	**— 21.91**	3 50 5.00	+ 3 13.78	+ 4.1	1 3 12.90	. .	54 59 44.1	— 3.3
	22	Polaris	.	6	16 50.65	+22.53	— 21.84	310 10 8.65	+ 3 17.06	— 1 11.8	1 16 51.34	. .	1 18 35.1	— 2.9
W.	23	Polaris	.	5	16 51.38	+22.53	— 21.86	310 10 9.18	+ 3 15.97	— 1 11.8	1 16 52.05	. .	1 18 34.6	— 3.4
S.	24	α Arietis	.	9	0 58.83	— 0.43	**— 21.82**	15 56 . .	. . . .	. .	2 0 36.53	. .	67 5 . .	. .
	25	ξ[1] Ceti	.	9	7 12.06	— 0.58	**— 21.87**	30 32 . .	. . . .	. .	2 6 49.61	. .	81 42 . .	. .
	26	γ[2] Ceti	.	9	37 38.59	— 0.64	**— 21.97**	36 4 . .	. . . .	. .	2 37 16.07	. .	87 15 . .	. .
	27	α Ceti	.	9	56 34.03	— 0.63	**— 21.83**	35 12 . .	. . . .	. .	2 56 11.51	. .	86 22 . .	. .
	28	ζ Arietis	.	9	8 34.98	— 0.45	**— 21.91**	18 14 . .	. . . .	. .	3 8 12.63	. .	69 23 . .	. .
29, W.	29	Anonymous	.	9	16 48.54	— 0.70	— 24.35	65 6 8.62	+ 3 24.11	+ 2 11.5	9 16 23.49	— 3.77	116 18 5.4	—10.7
	30	α Hydræ	.	9	22 16.13	- 0.50	**— 24.37**	46 58 . .	. . . .	. .	9 21 51.28	. .	98 9 . .	. .
	31	β Cephei, S. P.	.	9	27 35.03	— 1.98	— 24.35	288 56 7.38	+ 3 41.11	— 2 56.1	21 27 8.70	. .	340 3 13.6	— 1.8
	32	ε Leonis	.	9	39 37.78	— 0.15	**— 24.33**	14 30 9.05	+ 4 39.59	+ 15.9	9 39 13.28	. .	65 41 25.7	— 1.7
	33	μ Leonis	.	9	46 31.68	— 0.12	**— 24.36**	12 16 7.48	+ 4 1.55	+ 13.4	9 46 7.20	. .	63 26 43.6	— 2.2
	34	Anonymous	9.5	9	53 27.39	— 0.64	— 24.36	59 14 6.45	+ 3 39.85	+ 1 42.8	9 53 2.39	— 3.70	110 25 50.3	—13.5
	35	Lamont 927	7.9	9	31 18.26	— 0.52	-- 24.37	47 50 8.45	+ 2 57.81	+ 1 7.7	10 30 53.37	— 3.60	99 0 35.2	—17.9
	36	α[2] Libræ	.	9	44 48.87	— 0.60	**— 24.47**	54 22 11.05	+ 3 9.53	+ 1 25.0	14 44 23.81	. .	105 33 6.8	— 3.2
	37	β Ursæ Minoris	.	9	51 21.11	+ 1.63	— 24.46	324 12 7.80	+ 4 17.83	— 43.8	14 50 58.28	. .	15 22 3.0	— 2.1
	38	β Bootis	.	9	57 55.24	+ 0.07	**— 24.46**	357 58 7.10	+ 4 24.27	— 2.1	14 57 30.85	. .	49 8 50.5	— 1.6
	39	α Cor. Bor.	.	9	30 7.51	— 0.13	**— 24.47**	11 42 6.38	+ 4 42.68	+ 12.7	15 29 42.90	. .	62 53 23.0	— 1.1
30	40	Sun I, S.	.	9	26 1.47	— 0.67	— 24.50	60 48 8.95	+ 3 28.95	+ 1 48.4	16 25 36.30	+70.15	111 59 47.5	. .
	41	Sun II	.	9	28 21.77	— 0.67	— 24.50	60 32 . .	. . . .	. .	16 27 56.60	—70.15	111 44 . .	. .
	42	Venus I, N.	.	2	7 29.53	— 0.70	— 24.51	63 24 5.00	+ 2 57.07	+ 2 0.6	17 7 4.32	+ 2.31	114 35 23.9	. .
	43	Venus S.	.	.	. . . .	. .	. .	63 24 5.00	+ 3 54.36	+ 2 0.7	. . . . .	. .	114 36 21.3	. .
S.	44	π Aquarii	.	9	19 43.49	— 0.42	**— 24.57**	38 2 4.28	+ 3 33.84	+ 48.0	22 19 18.47	. .	89 12 47.3	— 1.1
	45	η Aquarii	.	9	29 46.09	— 0.43	**— 24.58**	39 32 9.40	+ 3 41.48	+ 50.7	22 29 21.05	. .	90 43 2.8	— 1.7
	46	λ Aquarii	.	9	46 56.26	— 0.51	**— 24.63**	47 2 1.88	+ 2 30.42	+ 1 5.9	22 46 31.14	. .	98 11 59.4	— 2.1
W.	47	α Piscis Australis	.	9	51 37.14	— 0.77	**— 25 00**	69 2 5.10	+ 3 25.78	+ 2 39.4	22 51 11.55	. .	120 14 31.5	— 2.4
	48	Weisse 1232	.	9	0 12.49	— 0.54	— 24.82	49 52 5.58	+ 4 20.71	+ 1 12.9	22 59 47.13	— 3.70	101 4 0.4	+23.3
	49	Weisse 1249	.	5	1 16.36	— 0.57	— 24.82	52 10 . .	. . . .	. .	23 0 50.97	— 3.70	103 21 . .	. .
S.	50	Weisse 1261	.	8	1 42.52	— 0.56	— 24.62	51 14 2.65	+ 4 33.83	+ 1 16.5	23 1 17.34	— 3.70	102 26 14.2	+22.8

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
21	30.20	36.8	33.0
31	30.04	29.5	27.3
35	30.06	29.5	27.3
36	30.17	31.3	31.8
41	30.17	33.8	33.7
47	30.22	31.5	28.8

For summary of the constants of reduction see page 3.

ZENITH-POINT CORR.

		″
11, 12, 18, 37, 47.	One bisection.	1, 5, 8, 13, 15, 17, 18, 19, 21, 22 + 56.36
23.	Three bisections.	2, 3, 4, 6, 7, 9, 10, 11, 12, 14, 16, 20, 23 + 56.40
		29 to 35 + 56.41
		36 to 43 + 54.88
		44 to 50 + 56.85

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
40	— 7.8	— 16 15.2	.	— 16 23.0
42	— 29.3	+ 29.2	.	— 0.1
43	— 29.3	— 29.2	+ 1.0	— 57.5

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Nov. 30, S.	1	Weisse 57[1]		6	6 17.95	− 0.56	− 24.62	51 22 10.52	+ 4 11.06	+ 1 16.9	23 5 52.77	− 3.72	102 33 59.7	+22.7
	2	Weisse 57[2]		5	6 18.24	− 0.56	− 24.62	51 22 10.52	+ 4 11.16	+ 1 16.9	23 5 53.06	− 3.72	102 33 59.8	+22.7
W.	3	Weisse 123		9	9 0.14	− 0.54	− 24.83	50 8 7.05	+ 3 41.48	+ 1 13.6	23 8 34.77	− 3.74	101 19 23.3	+23.2
	4	Weisse 228		9	13 21.81	− 0.56	− 24.83	51 38 5.25	+ 2 46.93	+ 1 17.6	23 12 56.42	− 3.76	102 48 31.0	+22.6
S.	5	Weisse 309		3	17 22.26	− 0.54	− 24.62	50 14 2.72	+ 3 6.68	+ 1 13.9	23 16 57.10	− 3.78	101 24 44.5	+23.1
W.	6	Weisse 315		9	17 39.00	− 0.53	− 24.83	48 50 8.20	+ 3 49.36	+ 1 10.3	23 17 13.64	− 3.78	100 1 29.1	+23.6
	7	Weisse 402		5	22 25.79	− 0.55	− 24.83	50 54 6.75	+ 3 45.80	+ 1 15.7	23 22 0.41	− 3.80	102 5 29.5	+22.8
S.	8	Weisse 427		9	23 23.37	− 0.53	− 24.62	48 44 2.62	+ 2 53.89	+ 1 10.1	23 22 58.22	− 3.80	99 54 27.8	+23.6
	9	Weisse 571		9	29 50.37	− 0.54	24.62	50 0 7.88	+ 4 16.64	+ 1 13.3	23 29 25.21	− 3.83	101 11 59.0	+23.1
	10	ι Piscium		9	34 21.86	− 0.38	**− 24.67**	33 50 7.02	+ 3 6.22	+ 41.3	23 33 56.85	. .	85 0 15.7	− 3.6
W.	11	Polaris		3	16 49.73	+24.29	− 24.87	310 10 5.35	+ 3 21.91	− 1 12.9	1 16 49.15	. .	1 18 35.6	− 1.5
S.	12	Polaris		7	16 50.66	+24.29	− 24.66	310 10 3.72	+ 3 23.48	− 1 12.9	1 16 50.29	. .	1 18 35.5	− 1.6
	13	o Piscium		9	39 39.44	− 0.34	**− 24.61**	30 16 . .	. . .	. .	1 39 14.43	. .	81 26 . .	. .
W.	14	β Arietis		9	48 37.43	− 0.21	**− 24.83**	18 36 5.30	+ 2 53.81	+ 20.8	1 48 12.34	. .	69 45 41.1	− 3.3
S.	15	α Arietis		9	1 1.38	− 0.18	**− 24.63**	15 56 . .	. . .	. .	2 0 36.53	. .	67 5 . .	. .
W.	16	ξ[1] Ceti		9	7 14.69	− 0.34	**− 24.75**	30 32 2.50	+ 3 2.11	+ 36.5	2 6 49.47	. .	81 42 2.3	− 3.5
S.	17	γ[2] Ceti		9	37 41.10	− 0.40	**− 24.72**	36 4 . .	. . .	. .	2 37 16.02	. .	87 15 . .	. .
	18	α Ceti		9	56 36.71	− 0.39	**− 24.75**	35 12 . .	. . .	. .	2 56 11.63	. .	86 22 . .	. .
Dec. 1, S.	19	ι Piscium		9	34 22.51	− 0.51	**− 25.20**	33 50 . .	. . .	. .	23 33 56.77	. .	85 0 . .	. .
	20	Groom. 4163		5	49 36.72	+ 1.38	− 25.23	325 6 . .	. . .	. .	23 49 12.87	. .	16 14 . .	. .
	21	ω Piscium		9	53 44.90	− 0.50	**− 25.23**	32 36 . .	. . .	. .	23 53 19.17	. .	83 47 . .	. .
	22	α Andromedæ		9	2 47.24	− 0.24	**− 25.27**	10 24 . .	. . .	. .	0 2 21.76	. .	61 33 . .	. .
	23	γ Pegasi		9	7 39.47	− 0.41	**− 25.25**	24 18 . .	. . .	. .	0 7 13.82	. .	75 28 . .	. .
	24	α Cassiopeæ		9	34 19.63	+ 0.29	− 25.25	342 56 . .	. . .	. .	0 33 54.67	. .	34 6 . .	. .
	25	β Ceti		9	38 10.03	− 0.77	**− 25.24**	57 26 . .	. . .	. .	0 37 44.01	. .	108 38 . .	. .
	26	β Andromedæ		9	3 38.19	− 0.15	**− 25.25**	3 50 . .	. . .	. .	1 3 12.77	. .	55 0 . .	. .
	27	Polaris		6	16 50.57	+23.67	− 25.27	310 10 . .	. . .	. .	1 16 48.97	. .	1 19 . .	. .
	28	θ[1] Ceti		9	18 37.76	− 0.66	**− 25.31**	47 36 . .	. . .	. .	1 18 11.83	. .	98 47 . .	. .
	29	η Piscium		9	25 40 61	− 0.40	**− 25.27**	24 6 . .	. . .	. .	1 25 14.93	. .	75 15 . .	. .
	30	o Piscium		9	39 40.22	− 0.47	**− 25.26**	30 16 . .	. . .	. .	1 39 14.47	. .	81 26 . .	. .
	31	α Arietis		9	1 2.11	− 0.31	**− 25.23**	15 56 . .	. . .	. .	2 0 36.51	. .	67 5 . .	. .
	32	γ[2] Ceti		9	37 41.89	− 0.53	**− 25.37**	36 4 . .	. . .	. .	2 37 16.05	. .	87 15 . .	. .
2, S.	33	η Aquarii		9	29 47.74	− 0.59	**− 26.10**	39 32 . .	. . .	. .	22 29 21.10	. .	90 43 . .	. .
	34	ζ Pegasi		9	36 4.58	− 0.47	**− 25.98**	28 36 . .	. . .	. .	22 35 38.06	. .	79 47 . .	. .
	35	ι Cephei		9	45 57.80	+ 0.76	− 26.05	333 16 . .	. . .	. .	22 45 32.51	. .	24 24 . .	. .
	36	α Piscis Australis		9	51 38.38	− 0.97	**− 26.07**	69 2 . .	. . .	. .	22 51 11.36	. .	120 15 . .	. .
W.	37	Weisse 1232		9	0 14.21	− 0.71	− 26.28	49 52 6.78	+ 4 23.89	+ 1 10.3	22 59 47.22	− 3.67	101 4 2.2	+23.1
S.	38	Weisse 123		8	9 1.69	− 0.72	− 26.06	50 8 4.70	+ 3 45.80	+ 1 11.0	23 8 34.91	− 3.71	101 19 22.7	+23.0
W.	39	Lalande 45504		9	9 42.30	− 0.73	− 26.29	51 0 7.80	+ 4 20.84	+ 1 13.2	23 9 15.28	− 3.71	102 12 3.0	+22.7
	40	Weisse 228		9	13 23.41	− 0.73	− 26.29	51 38 6.80	+ 2 49.00	+ 1 14.8	23 12 56.39	− 3.72	102 48 31.8	+22.4
S.	41	Weisse 315		9	17 40.58	− 0.70	− 26.06	48 50 8.60	+ 3 51.64	+ 1 7.8	23 17 13.82	− 3.75	100 1 29.2	+23.4
	42	Weisse 402		9	22 27.34	− 0.72	− 26.06	50 54 5.28	+ 3 48.79	+ 1 13.0	23 22 0.56	− 3.77	102 5 28.3	+22.6
W.	43	Weisse 427		9	23 25.11	− 0.70	− 26.29	48 44 4.60	+ 2 55.68	+ 1 7.6	23 22 58.12	− 3.78	99 54 29.1	+23.4
	44	ι Piscium		9	34 23.62	− 0.53	**− 26.30**	33 50 8.42	+ 3 7.03	+ 39.8	23 33 56.80	. .	85 0 16.4	− 3.0
	45	ω Piscium		9	53 45.93	− 0.52	**− 26.25**	32 36 7.40	+ 3 47.49	+ 38.0	23 53 19.11	. .	83 46 54.1	− 1.6
S.	46	α Andromedæ		9	2 48.04	− 0.24	**− 26.08**	10 24 . .	. . .	. .	0 2 21.73	. .	61 33 . .	. .
W.	47	γ Pegasi		9	7 40.56	− 0.42	**− 26.34**	24 18 . .	. . .	. .	0 7 13.84	. .	75 28 . .	. .
	48	α Cassiopeæ		9	34 20.79	+ 0.32	− 26.31	342 56 . .	. . .	. .	0 33 55.80	. .	34 6 . .	. .
S.	49	β Ceti		7	38 11.04	− 0.81	**− 26.22**	57 26 . .	. . .	. .	0 37 44.15	. .	108 38 . .	. .
	50	β Andromedæ		9	3 38.93	− 0.15	**− 26.00**	3 50 . .	. . .	. .	1 3 12.69	. .	55 0 . .	. .

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
11	30.22	29.1	25.9
18	30.20	29.8	25.8
41	29.79	41.9	38.7

For summary of the constants of reduction see page 3.

7, 45. One bisection.
12. Three bisections.

ZENITH-POINT CORR.

″

1 to 16 + 56.85
37 to 45 + 56.28

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
Dec.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
2, W.	1	Polaris		3	16 48.77	+24.92	— 26.32	310 10 . .	. . .	. .	1 16 47.37	. .	1 19 . .	. .
S.	2	Polaris		5	16 50.28	+24.92	— 26.09	310 10 . .	. . .	. .	1 16 49.11	. .	1 19 . .	. .
	3	o Piscium		9	39 41.03	— 0.49	**— 26.06**	30 16 . .	. . .	. .	1 39 14.45	. .	81 24 . .	. .
	4	β Arietis		9	48 38.78	— 0.35	**— 26.05**	18 36 . .	. . .	. .	1 48 12.33	. .	69 46 . .	. .
	5	ξ^1 Ceti		9	7 16.21	— 0.49	**— 26.12**	30 32 . .	. . .	. .	2 6 49.62	. .	81 42 . .	. .
	6	ξ^2 Ceti		9	22 24.63	— 0.50	— 26.11	30.54 . .	. . .	. .	2 21 58.02	. .	82 4 . .	. .
3, S.	7	η Aquarii		9	29 48.28	— 0.40	**— 26.85**	39 32 1.88	+ 3 47.46	+ 50.7	22 29 21.00	. .	90 43 1.2	— 3.6
	8	ζ Pegasi		9	36 5.27	— 0.30	**— 26.86**	28 36 1.90	+ 3 33.69	+ 33.5	22 35 38.09	. .	79 46 30.3	— 2.8
W.	9	λ Aquarii		9	46 58.62	— 0.47	**— 27.07**	47 2 3.82	+ 2 29.00	+ 1 5.9	22 46 31.08	. .	98 11 59.9	— 1.8
S.	10	α Piscis Australis		9	51 38.96	— 0.71	**— 26.93**	69 2 4.32	+ 3 27.32	+ 2 39.5	22 51 11.36	. .	120 14 32.3	— 1.8
W.	11	Weisse 1232		8	0 14.67	— 0.50	— 27.07	49 32 3.88	+ 4 24.55	+ 1 12.9	22 59 47.10	— 3.65	101 4 2.5	+23.0
S.	12	Weisse 1249		5	1 18.58	— 0.52	— 26.89	52 10 4.22	+ 3 41.82	+ 1 19.1	23 0 51.17	— 3.65	103 21 26.3	+22.2
	13	Weisse 1261		9	1 44.75	— 0.51	— 26.89	51 14 1.68	+ 4 34.86	+ 1 16.5	23 1 17.35	— 3.65	102 26 14.2	+22.5
W.	14	Weisse 49		9	5 50.78	— 0.50	— 27.07	49 58 2.88	+ 2 51.78	+ 1 13.1	23 5 23.21	— 3.67	101 8 29.0	+22.9
S.	15	Weisse 123		9	9 2.21	— 0.50	— 26.89	50 8 0.80	+ 3 45.31	+ 1 13.6	23 8 34.82	— 3.69	101 19 20.9	+22.9
	16	Lalande 45504		9	9 42.67	— 0.51	— 26.89	51 0 8.72	+ 4 15.34	+ 1 15.9	23 9 15.27	— 3.69	102 12 1.2	+22.5
W.	17	Weisse 226		5	13 20.54	— 0.49	— 27.07	49 3 59.22	+ 3 23.13	+ 1 10.9	23 12 52.98	— 3.71	100 14 54.5	+23.2
	18	Weisse 228		3	13 23.89	— 0.52	— 27.07	51 38 5.02	+ 2 46.87	+ 1 17.6	23 12 56.30	— 3.70	102 48 30.7	+22.3
S.	19	Weisse 315		9	17 41.04	— 0.49	— 26.89	48 50 4.25	+ 3 52.48	+ 1 10.3	23 17 13.66	— 3.73	100 1 28.2	+23.3
W.	20	Weisse 402		9	22 27.98	— 0.51	— 27.07	50 54 2.05	+ 3 51.23	+ 1 15.6	23 22 0.40	— 3.75	102 5 30.1	+22.5
	21	Weisse 427		9	23 25.67	— 0.49	— 27.07	48 44 2.00	+ 2 56.06	+ 1 10.0	23 22 58.11	— 3.76	99 54 29.3	+23.3
	22	ι Piscium		9	34 24.20	— 0.35	**— 27.08**	33 50 3.90	+ 3 9.01	+ 41.2	23 33 56.78	. .	85 0 15.3	— 4.2
	23	Groom. 4163		9	49 37.69	+ 1.36	— 27.08	325 6 3.20	+ 2 19.89	— 42.8	23 49 11.97	. .	16 14 1.5	— 1.9
S.	24	ω Piscium		9	53 46.37	— 0.34	**— 26.88**	32 36 6.22	+ 3 46.29	+ 39.4	23 53 19.14	. .	83 46 53.1	— 2.7
W.	25	α Andromedæ		9	2 48.88	— 0.11	**— 27.07**	10 24 3.98	+ 2 26.37	+ 11.3	0 2 21.69	. .	61 33 2.9	— 2.4
S.	26	γ Pegasi		9	7 40.98	— 0.26	**— 26.92**	24 18 . .	. . .	. .	0 7 13.83	. .	75 28 . .	. .
	27	β Andromedæ		9	3 39.71	— 0.03	**— 26.91**	3 50 . .	. . .	. .	1 3 12.78	. .	55 0 . .	. .
	28	Polaris		5	16 52.78	+21.65	— 26.90	310 10 . .	. . .	. .	1 16 47.53	. .	1 19 . .	. .
	29	β Arietis		9	48 39.41	— 0.20	**— 26.84**	18 36 . .	. . .	. .	1 48 12.30	. .	69 46 . .	. .
	30	α Arietis		9	1 3.63	— 0.18	**— 26.89**	15 56 . .	. . .	. .	2 0 36.54	. .	67 5 . .	. .
	31	ξ^1 Ceti		9	7 16.87	— 0.32	**— 26.96**	30 32 . .	. . .	. .	2 6 49.64	. .	81 42 . .	. .
	32	ξ^2 Ceti		9	22 25.28	— 0.32	**— 26.93**	30 54 . .	. . .	. .	2 21 58.05	. .	82 4 . .	. .
W.	33	Comet 1882 II		.	. . . .	. .	. .	68 4 3.00	+ 3 17.14	+ 2 35.0	8 42 . .	. .	119 16 16.3	. .
	34	ε Bootis		9	40 19.11	— 0.10	**— 27.30**	11 16 5.62	+ 3 14.35	+ 12.3	14 39 51.62	. .	62 25 53.5	— 3.2
	35	β Ursæ Minoris		.	. . . .	. .	. .	324 12 6.28	+ 4 21.92	— 44.2	14 51.0	. .	15 22 5.2	— 1.3
	36	β Bootis		.	. . . .	. .	. .	357 58 7.72	+ 4 25.08	— 2.1	14 57.5	. .	49 8 51.9	— 1.6
	37	γ^2 Ursæ Minoris		9	21 16.82	+ 0.94	— 27.39	326 36 6.38	+ 3 14.43	— 40.3	15 20 50.37	. .	17 45 1.7	— 1.4
	38	α Cor. Bor.		.	. . . .	. .	. .	11 42 9.58	+ 4 39.59	+ 12.8	15 29.7	. .	62 53 23.2	— 2.1
	39	α Serpentis		9	38 57.28	— 0.28	**— 27.48**	32 2 10.75	+ 2 59.58	+ 38.3	15 38 29.61	. .	83 12 9.8	— 5.1
4	40	Sun I, N.		9	43 24.14	— 0.51	— 27.39	60 50 9.70	+ 3 54.31	+ 1 48.5	16 42 56.24	+70.48	112 2 13.7	. .
	41	Sun II, S.		9	45 45.10	— 0.51	— 27.39	61 21 5.25	+ 4 27.11	+ 1 50.9	16 45 17.20	—70.48	112 34 44.5	. .
S.	42	λ Aquarii		9	46 58.97	— 0.57	**— 27.33**	47 2 3.98	+ 2 28.55	+ 1 5.1	22 46 31.01	. .	98 11 58.8	— 2.9
	43	α Piscis Australis		9	51 39.53	— 0.84	**— 27.38**	69 2 8.32	+ 3 24.45	+ 2 37.4	22 51 11.30	. .	120 14 31.4	— 2.7
	44	ψ Aquarii		9	10 14.21	— 0.59	— 27.37	48 32 8.48	+ 3 45.40	+ 1 8.7	23 9 46.25	— 3.68	99 43 23.8	+23.3
	45	o Cephei		9	14 17.74	+ 0.92	— 27.37	331 22 2.68	+ 3 25.65	— 33.0	23 13 51.29	. .	22 31 16.5	— 1.6
	46	θ Piscium		9	22 30.57	— 0.42	**— 27.43**	33 6 0.70	+ 2 34.78	+ 39.6	23 22 2.79	. .	84 15 36.3	— 3.9
	47	ι Piscium		9	34 24.54	— 0.43	**— 27.35**	33 50 . .	. . .	. .	23 33 56.76	. .	85 0 . .	. .
	48	ω Piscium		9	53 46.88	— 0.42	**— 27.32**	32 36 . .	. . .	. .	23 53 19.12	. .	83 47 . .	. .
	49	α Andromedæ		9	2 49.18	— 0.16	**— 27.33**	10 24 . .	. . .	. .	0 2 21.69	. .	61 33 . .	. .
	50	γ Pegasi		9	7 41.44	— 0.32	**— 27.34**	24 18 . .	. . .	. .	0 7 13.80	. .	75 28 . .	. .

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
6	29.81	39.5	35.5	ZENITH-POINT CORR.	40	— 7.8	+ 16 15.3	. .	+ 16 7.5
7	30.23	31.8	29.0		41	— 7.9	— 16 15.4	. .	— 16 23.3
29	30.25	29.2	27.2	″					
33	30.28	24.7	20.0	38. One bisection. 7, 8, 10, 12, 13, 15, 16, 19, 24 + 55.36					
39	30.25	32.9	33.6	9, 11, 14, 17, 18, 20, 21, 22, 23, 25 + 56.01					
41	30.23	34.2	35.0	33 to 41 + 55.50					
42	30.10	35.5	32.8	42 to 46 + 55.78					
46	30.10	34.9	32.5						

39. Barometer and thermometers read at $16^h\ 19^m$.

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
Dec.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
4, W.	1	Comet 1882 II		11	38 33.94	− 0.95	− 27.77	68 16 6.90	+ 1 9.95	+ 2 30.8	8 38 5.22	. .	119 26 8.8	. .
	2	ι Ursæ Majoris		9	51 40.94	+ 0.17	− 27.79	350 20 8.92	+ 3 58.19	− 10.2	8 51 13.32	. .	41 30 18.1	− 0.4
	3	κ Cancri		9	1 54.00	− 0.44	**− 27.78**	27 42 1.78	+ 2 53.41	+ 31.8	9 1 25.76	. .	78 51 48.2	− 2.2
	4	α Hydræ		9	22 19.93	− 0.66	**− 27.86**	46 58 5.92	+ 3 35.96	+ 1 4.9	9 21 51.43	. .	98 9 8.0	− 1.6
	5	β Cephei, S. P.		9	27 38.38	− 2.24	− 27.85	288 56 7.00	+ 3 40.42	− 2 54.1	21 27 8.29	. .	340 3 14.5	− 0.4
	6	ε Leonis		9	39 41.62	− 0.27	**− 27.88**	14 30 4.88	+ 4 43.88	+ 15.7	9 39 13.48	. .	65 41 25.7	− 2.5
	7	μ Leonis		9	46 35.49	− 0.24	**− 27.87**	12 16 6.65	+ 4 3.26	+ 13.2	9 46 7.37	. .	63 26 44.3	− 2.3
5, W.	8	η Bootis		9	49 35.53	− 0.46	**− 28.79**	19 50 6.10	+ 4 7.16	+ 21.4	13 49 6.26	. .	71 0 55.9	− 2.4
	9	α Bootis		9	10 48.14	− 0.46	**− 28.84**	19 2 5.40	+ 3 42.22	+ 20.4	14 10 18.85	. .	70 12 29.2	− 1.6
	10	β Ursæ Minoris		9	51 26.07	+ 0.85	− 28.87	324 12 3.38	+ 4 22.83	− 42.4	14 50 58.05	. .	15 22 5.0	− 2.2
	11	β Bootis		9	58 0.10	− 0.24	**− 28.89**	357 58 . .	. . .	. .	14 57 30.99	. .	49 9 . .	. .
6	12	Sun I		9	52 9.60	− 0.83	− 28.97	61 22 . .	. . .	. .	16 51 39.80	+70.57	112 33 . .	. .
	13	Venus I, N.		5	53 7.31	− 0.83	− 28.97	61 34 3.80	+ 1 22.90	+ 1 48.5	16 52 37.51	+ 2.25	112 43 36.4	. .
	14	Venus II, S.		5	53 11.82	− 0.83	− 28.97	61 34 3.80	+ 2 25.88	+ 1 48.6	16 52 42.02	− 2.26	112 44 39.5	. .
	15	Sun II		7	54 30.75	− 0.83	− 28.97	61 22 . .	. . .	. .	16 54 0.95	−70.58	112 33 . .	. .
	16	γ Draconis.		9	54 20.77	− 0.08	− 29.03	347 20 . .	. . .	. .	17 53 51.66	. .	28 30 . .	. .
	17	α Lyræ		9	33 26.81	− 0.27	**− 29.09**	0 10 . .	. . .	. .	18 32 57.48	. .	51 19 . .	. .
	18	ζ Aquilæ		6	0 30.90	− 0.51	**− 29.11**	25 8 . .	. . .	. .	19 0 1.31	. .	76 18 . .	. .
	19	δ Draconis		9	12 57.66	+ 0.38	− 29.09	331 24 2.15	+ 2 28.40	− 32.0	19 12 28.95	. .	22 32 19.8	− 1.4
	20	α Aquilæ		9	45 33.71	− 0.55	**− 29.16**	30 16 . .	. . .	. .	19 45 4.04	. .	81 26 . .	. .
	21	γ Cygni		9	18 30.62	− 0.25	**− 29.05**	358 58 2.72	+ 2 18.85	− 1.0	20 18 1.20	. .	50 6 41.8	− 1.8
	22	α Cygni		9	37 55.50	− 0.19	**− 29.18**	353 58 . .	. . .	. .	20 37 26.14	. .	45 8 . .	. .
	23	α Pegasi		9	59 26.37	− 0.47	**− 29.27**	24 16 . .	. . .	. .	22 58 56.61	. .	75 25 . .	. .
	24	ψ Aquarii		9	10 16.32	− 0.68	− 29.29	48 32 2.82	+ 3 53.40	+ 1 7.2	23 9 46.35	− 3.64	99 43 24.6	+23.1
	25	Weisse 226		9	13 23.17	− 0.68	− 29.29	49 4 3.92	+ 3 21.78	+ 1 8.5	23 12 53.20	− 3.66	100 14 55.4	+22.9
	26	ι Piscium		9	34 26.66	− 0.55	**− 29.37**	33 50 8.50	+ 3 7.60	+ 39.9	23 33 56.80	. .	85 0 17.2	− 2.5
	27	Groom. 4163 (R)		.	. . . .	. .	. .	214 48 6.12	+ 3 30.84	+ 41.5	. . . .	. .	16 14 2.7	− 0.4
	28	Groom. 4163		8	49 40.61	+ 0.88	− 29.31	325 6 1.92	+ 2 19.91	− 41.5	23 49 12.18	. .	16 14 1.5	− 1.6
	29	ω Piscium		8	53 48.93	− 0.54	**− 29.27**	32 36 . .	. . .	. .	23 53 19.08	. .	83 47 . .	. .
	30	α Andromedæ		9	2 51.32	− 0.34	**− 29.32**	10 24 3.78	+ 2 27.06	+ 11.0	0 2 21.66	. .	61 33 3.0	− 2.3
	31	22 Andromedæ		9	4 45.46	− 0.14	− 29.32	353 26 7.95	+ 2 0.64	− 6.8	0 4 16.00	− 4.59	44 34 23.0	+39.0
	32	σ Andromedæ		9	12 43.98	− 0.26	− 29.32	2 42 7.55	+ 2 57.98	+ 2.9	0 12 14.40	− 4.49	53 51 29.6	+36.4
	33	ο Cassiopeæ		9	38 44.02	− 0.10	− 29.34	351 12 8.42	+ 2 43.40	− 9.2	0 38 14.58	− 5.18	42 21 3.8	+37.4
	34	ε Piscium		9	57 23.41	− 0.53	**− 29.34**	31 34 5.58	+ 3 10.78	+ 36.9	0 56 53.53	. .	82 44 14.5	− 3.5
	35	β Andromedæ		9	3 42.36	− 0.27	**− 29.35**	3 50 10.78	+ 3 8.63	+ 4.1	1 3 12.74	. .	54 59 44.7	− 2.1
	36	Polaris		9	16 57.60	+17 38	− 29.35	310 10 7.30	+ 3 16.08	− 1 11.0	1 16 45.63	. .	1 18 33.6	− 2.1
7, W.	37	ζ Aquilæ		9	0 31.79	− 0.16	**− 30.36**	25 7 59.72	+ 3 30.08	+ 29.0	19 0 1.21	. .	76 18 20.0	− 2.9
	38	δ Draconis		9	12 58.46	+ 0.63	− 30.42	331 23 59.78	+ 2 33.09	− 33.6	19 12 28.67	. .	22 32 20.5	− 0.9
	39	δ Aquilæ		9	20 6.08	− 0.23	**− 30.48**	35 56 4.18	+ 3 40.08	+ 44.8	19 19 35.43	. .	87 6 50.3	− 2.9
	40	γ Aquilæ		9	41 11.94	− 0.18	**− 30.43**	28 30 9.72	+ 2 56.68	+ 33.6	19 40 41.34	. .	79 40 1.2	− 2.3
	41	α Aquilæ		9	45 34.62	− 0.19	**− 30.43**	30 16 . .	. . .	. .	19 45 4.01	. .	81 26 . .	. .
	42	ε Draconis		9	49 0.89	+ 0.75	− 30.42	328 52 4.70	+ 3 38.40	− 37.3	19 48 31.22	. .	20 1 27.0	− 0.6
S.	43	λ Aquarii		9	47 1.66	− 0.44	− 30.18	47 2 . .	. . .	. .	22 46 31.01	. .	98 12 . .	. .
	44	α Piscis Australis		9	51 42.20	− 0.67	**− 30.27**	69 2 . .	. . .	. .	22 51 11.32	. .	120 15 . .	. .
	45	Weisse 1232		9	0 17.81	− 0.46	− 30.22	49 52 3.48	+ 4 22.15	+ 1 14.8	22 59 47.13	− 3.58	101 4 1.6	+22.6
	46	Weisse 1249		9	1 21.59	− 0.49	− 30.22	52 9 58.65	+ 3 45.95	+ 1 21.1	23 0 50.88	− 3.58	103 21 26.9	+21.8
	47	Weisse 49		9	5 54.00	− 0.47	− 30.22	49 58 2.00	+ 2 50.36	+ 1 15.0	23 5 23.31	− 3.60	101 8 28.6	+22.6
	48	Lalande 45504		9	9 45.90	− 0.48	− 30.22	51 0 7.92	+ 4 14.86	+ 1 17.9	23 9 15.20	− 3.62	102 12 1.9	+22.2
	49	Weisse 228		9	13 27.11	− 0.48	− 30.22	51 38 2.40	+ 2 47.40	+ 1 19.6	23 12 56.41	− 3.64	102 48 30.6	+21.9
	50	Weisse 315		9	17 44.32	− 0.46	− 30.22	48 50 6.08	+ 3 50.58	+ 1 12.2	23 17 13.64	− 3.66	100 1 30.1	+22.9

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
1	30.09	35.9	33.7
7	30.10	35.7	33.3
9	30.13	45.4	45.7
15	30.13	47.4	46.7
22	30.18	48.7	49.2
23	. .	. .	44.3
26	30.13	44.4	. .
36	30.12	42.0	36.8
37	30.10	28.8	25.0
43	30.25	21.8	17.5

For summary of the constants of reduction see page 3.

		ZENITH-POINT CORR.
		″
25, 26.	One bisection.	1 to 7 + 56.41
13, 36.	Three bisections.	8 to 21 + 55.95
8.	Four bisections.	24 to 36 + 55.67
		37 to 42 + 56.58
		45 to 50 + 57.52

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
13	− 29.3	+ 31.5	. .	+ 2.2
14	− 29.3	− 31.6	. .	− 1 0.9

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
Dec.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
7, S.	1	θ Piscium		9	22 33.20	− 0.31	**− 30.20**	33 6 . .	. . .	. .	23 22 2.67	. .	84 16 . .	. .
	2	γ Cephei		9	35 4.39	+ 1.99	− 30.23	321 52 . .	. . .	. .	23 34 36.15	. .	13 1 . .	. .
	3	α Andromedæ		9	2 51.92	− 0.07	**− 30.20**	10 24 . .	. . .	. .	0 2 21.62	. .	61 33 . .	. .
	4	12 Ceti		9	24 35.71	− 0.40	**− 30.27**	43 26 . .	. . .	. .	0 24 5.07	. .	94 36 . .	. .
	5	β Ceti		9	38 14.71	− 0.54	**− 30.21**	57 26 . .	. . .	. .	0 37 43.93	. .	108 38 . .	. .
W.	6	κ Cephei, S. P.		9	13 18.29	− 2.78	− 30.75	296 14 5.60	+ 3 35.87	− 2 9.7	20 12 44.76	. .	347 21 53.0	+ 0.3
	7	η Cancri		9	26 28.78	0.00	**− 30.73**	18 0 . .	. . .	. .	8 25 58.03	. .	69 10 . .	. .
	8	Comet 1882 II		11	29 26.57	− 0.49	− 30.75	68 40 2.00	+ 2 50.14	+ 2 44.2	8 28 55.33	. .	119 51 57.5	. .
	9	ε Hydræ		9	41 7.09	− 0.14	**− 30.76**	31 58 . .	. . .	. .	8 40 36.20	. .	83 9 . .	. .
	10	O. Arg. N. 9450		9	50 53.37	+ 0.41	− 30.75	350 20 6.25	+ 4 2.56	− 10.9	8 50 23.03	− 5.78	41 30 19.1	−32.1
	11	κ Cancri		9	1 56.72	− 0.10	**− 30.75**	27 42 6.40	+ 2 45.05	+ 33.9	9 1 25.87	. .	78 51 46.5	− 4.4
11, W.	12	α Aquilæ		9	45 36.78	− 0.36	**− 32.44**	30 16 . .	. . .	. .	19 45 4.03	. .	81 26 . .	. .
	13	γ Cygni		9	18 33.57	− 0.07	**− 32.28**	358 58 . .	. . .	. .	20 18 1.11	. .	50 7 . .	. .
	14	α Cygni		9	37 58.41	− 0.01	**− 32.36**	353 58 . .	. . .	. .	20 37 26.01	. .	45 8 . .	. .
	15	α Cephei		9	16 18.59	+ 0.34	− 32.39	336 46 . .	. . .	. .	21 15 46.54	. .	37 54 . .	. .
	16	β Aquarii		9	25 56.83	− 0.46	**− 32.48**	44 54 . .	. . .	. .	21 25 23.98	. .	96 5 . .	. .
	17	β Cephei		9	27 39.77	+ 0.68	− 32.39	328 48 . .	. . .	. .	21 27 8.06	. .	19 57 . .	. .
S.	18	η Aquarii		9	29 53.79	− 0.43	**− 32.42**	39 32 6.15	+ 3 45.67	+ 49.9	22 29 20.98	. .	90 43 2.9	− 2.4
	19	ζ Pegasi		9	36 10.73	− 0.34	**− 32.38**	28 36 4.42	+ 3 32.44	+ 33.0	22 35 38.01	. .	79 46 31.1	− 2.5
	20	λ Aquarii		9	47 3.84	− 0.49	**− 32.37**	47 2 3.75	+ 2 29.56	+ 1 4.9	22 46 30.96	. .	98 11 59.4	− 2.9
	21	α Piscis Australis		9	51 44.34	− 0.70	**− 32.44**	69 2 5.22	+ 3 30.62	+ 2 36.9	22 51 11.25	. .	120 14 33.9	− 0.6
	22	Weisse 1232		9	0 20.02	− 0.51	− 32.39	49 52 4.35	+ 4 25.03	+ 1 11.7	22 59 47.12	− 3.54	101 4 2.3	+22.4
	23	Weisse 1249		9	1 23.89	− 0.54	− 32.39	52 10 3.28	+ 3 44.38	+ 1 17.8	23 0 50.96	− 3.55	103 21 26.7	+21.6
	24	ψ Aquarii		9	10 19.04	− 0.50	− 32.39	48 32 5.98	+ 3 49.33	+ 1 8.4	23 9 46.15	− 3.59	99 43 24.9	+22.9
	25	Weisse 228		9	13 29.19	− 0.53	− 32.39	51 38 3.58	+ 2 49.64	+ 1 16.4	23 12 56.27	− 3.60	102 48 30.8	+21.8
	26	Weisse 315		9	17 46.51	− 0.51	− 32.39	48 50 6.00	+ 3 53.36	+ 1 9.2	23 17 13.61	− 3.63	100 1 29.8	+22.7
	27	θ Piscium		9	22 35.41	− 0.38	**− 32.39**	33 6 4.52	+ 2 31.89	+ 39.5	23 22 2.63	. .	84 15 37.1	− 3.6
	28	γ Cephei		9	35 6.88	+ 1.44	− 32.40	321 51 57.85	+ 3 15.94	− 47.4	23 34 35.92	. .	13 0 47.6	− 2.1
	29	α Andromedæ		9	2 54.11	− 0.18	**− 32.34**	10 24 4.30	+ 2 26.08	+ 11.2	0 2 21.52	. .	61 33 2.8	− 2.5
	30	α Arietis		9	1 9.21	− 0.23	**− 32.45**	15 56 . .	. . .	. .	2 0 36.56	. .	67 5 . .	. .
	31	ξ^1 Ceti		9	7 22.32	− 0.35	**− 32.41**	30 32 . .	. . .	. .	2 6 49.54	. .	81 42 . .	. .
	32	ι Cassiopeæ		9	20 2.53	+ 0.60	− 32.43	331 58 . .	. . .	. .	2 19 30.70	. .	23 7 . .	. .
	33	ξ^2 Ceti		9	22 30.76	− 0.37	**− 32.39**	30 54 . .	. . .	. .	2 21 57.96	. .	82 4 . .	. .
	34	γ^2 Ceti		9	37 48.89	− 0.40	**− 32.53**	36 4 . .	. . .	. .	2 37 16.06	. .	87 15 . .	. .
	35	ζ Arietis		9	8 45.26	− 0.25	**− 32.37**	18 14 . .	. . .	. .	3 8 12.57	. .	69 23 . .	. .
	36	ε Eridani		9	27 59.89	− 0.50	**− 32.56**	48 40 . .	. . .	. .	3 27 26.94	. .	99 51 . .	. .
	37	κ Cephei, S. P.		9	13 19.83	− 2.79	− 32.67	296 14 . .	. . .	. .	20 12 44.37	. .	347 22 . .	. .
	38	Comet 1882 II		9	16 55.18	− 0.76	− 32.68	69 4 7.55	+ 3 19.66	+ 2 39.7	8 16 21.74	. .	120 16 28.1	. .
	39	η Cancri		9	26 31.10	− 0.22	**− 32.71**	18 0 14.10	+ 2 58.52	+ 20.0	8 25 58.20	. .	69 9 53.8	− 2.3
	40	Groom. 3241, S. P.		9	31 2.89	− 2.06	− 32.68	291 0 12.22	+ 4 30.33	− 2 38.1	20 30 28.15	. .	342 8 25.7	− 3.2
	41	ε Hydræ		9	41 9.41	− 0.36	**− 32.75**	31 58 3.12	+ 4 12.53	+ 38.4	8 40 36.36	. .	83 9 15.2	− 3.0
	42	κ Cancri		9	1 59.04	− 0.43	**− 32.61**	27 42 5.42	+ 2 49.53	+ 32.3	9 1 25.91	. .	78 51 48.5	− 3.0
	43	β Libræ		9	11 15.79	− 0.62	**− 32.91**	47 46 9.58	+ 3 15.35	+ 1 7.5	15 10 42.28	. .	98 56 53.6	− 2.5
	44	γ^2 Ursæ Minoris		9	21 22.77	+ 1.30	− 32.89	326 36 5.22	+ 3 17.26	− 40.2	15 20 51.18	. .	17 45 3.5	− 2.6
	45	α Cor. Bor.		9	30 16.21	− 0.21	**− 32.88**	11 42 3.95	+ 4 47.17	+ 12.7	15 29 43.10	. .	62 53 25.0	− 2.7
	46	α Serpentis		9	39 2.99	− 0.45	**− 32.87**	32 2 4.05	+ 3 10.20	+ 38.3	15 38 29.64	. .	83 12 13.7	− 2.9
	47	β Herculis		9	25 43.72	− 0.28	**− 32.96**	17 4 2.25	+ 4 28.34	+ 18.8	16 25 10.51	. .	68 15 10.6	− 2.3
	48	Venus II, S.		9	39 14.68	− 0.76	− 32.94	59 34 4.25	+ 5 14.52	+ 1 43.4	16 38 40.98	− 2.26	110 47 23.4	. .
12	49	Sun I, N.		9	18 35.68	− 0.79	− 32.96	61 40 9.42	+ 2 42.85	+ 1 52.0	17 18 1.93	+71.06	112 51 5.5	. .

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
4	30.29	19.1	15.2
5	. .	. .	14.9
8	30.40	12.7	9.6
11	30.39	12.0	9.2
18	30.05	36.2	34.0
29	30.06	34.8	32.8
38	30.23	31.0	29.1
42	30.23	30.2	28.0
44	30.37	33.8	32.8
49	30.32	37.2	36.9

For summary of the constants of reduction see page 3.

41, 45. One bisection.
48. Four bisections.

ZENITH-POINT CORR.

	″
6 to 11	+ 55.87
18 to 29	+ 56.72
38 to 42	+ 56.67
43 to 49	+ 56.04

No.	Paraliax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″
48	− 28.2	− 31.7	. .	− 59.9
49	− 7.9	+ 16 16.2	. .	+ 16 8.3

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
Dec.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
12, W.	1	Sun II, S.		9	20 57.80	− 0.79	− 32.96	62 12 4.50	+ 3 17.75	+ 1 54.6	17 20 24.05	−71.06	113 23 38.0	. .
S.	2	η Aquarii		9	29 54.46	− 0.63	**− 32.90**	39 32 6.88	+ 3 44.78	+ 50.1	22 29 20.93	. .	90 43 3.0	− 2.4
	3	ζ Pegasi		9	36 11.38	− 0.53	**− 32.85**	28 36 4.48	+ 3 32.33	+ 33.1	22 35 37.95	. .	79 46 31.1	− 2.6
	4	λ Aquarii		9	47 4.62	− 0.70	**− 32.95**	47 2 2.42	+ 2 30.45	+ 1 5.1	22 46 31.02	. .	98 11 59.2	− 3.1
	5	α Piscis Australis		9	51 45.16	− 0.95	**− 33.03**	69 2 . .	. . .	. .	22 51 11.31	. .	120 15 . .	. .
	6	ψ Aquarii		9	10 19.70	− 0.72	− 32.90	48 32 5.68	+ 3 48.45	+ 1 8.8	23 9 46.08	− 3.59	99 43 24.1	+22.8
	7	Weisse 226		9	13 26.52	− 0.72	− 32.90	49 4 5.78	+ 3 18.67	+ 1 10.0	23 12 52.90	− 3.60	100 14 55.6	+22.6
	8	θ Piscium		9	22 35.97	− 0.57	**− 32.77**	33 6 4.78	+ 2 31.55	+ 39.6	23 22 2.50	. .	84 15 37.1	− 3.7
	9	γ Cephei		9	35 7.11	+ 1.54	− 32.89	321 52 . .	. . .	. .	23 34 35.76	. .	13 1 . .	. .
	10	α Andromedæ		9	2 54.73	− 0.34	**− 32.81**	10 24 2.48	+ 2 26.80	+ 11.2	0 2 21.50	. .	61 33 1.7	− 3.6
	11	12 Ceti		9	24 38.66	− 0.67	**− 33.01**	43 26 . .	. . .	. .	0 24 5.10	. .	94 36 . .	. .
	12	Polaris		6	16 53.88	+20.83	− 32.88	310 10 . .	. . .	. .	1 16 41.83	. .	1 19 . .	. .
	13	η Piscium		9	25 48.19	− 0.48	**− 32.85**	24 6 . .	. . .	. .	1 25 14.83	. .	75 15 . .	. .
	14	ο Piscium		9	39 47.83	− 0.54	**− 32.87**	30 16 . .	. . .	. .	1 39 14.41	. .	81 26 . .	. .
	15	β Arietis		9	48 45.63	− 0.43	**− 32.88**	18 36 . .	. . .	. .	1 48 12.32	. .	69 46 . .	. .
	16	α Arietis		9	1 9.80	− 0.40	**− 32.88**	15 56 . .	. . .	. .	2 0 36.52	. .	67 5 . .	. .
	17	ζ¹ Ceti		9	7 22.97	− 0.55	**− 32.87**	30 32 . .	. . .	. .	2 6 49.55	. .	81 42 . .	. .
14, S.	18	λ Aquarii		9	47 6.61	− 0.73	**− 34.93**	47 2 5.00	+ 2 31.24	+ 1 3.4	22 46 30.92	. .	98 12 0.8	− 1.6
	19	α Piscis Australis		9	51 47.10	− 0.98	**− 34.97**	69 2 4.00	+ 3 35.78	+ 2 33.3	22 51 11.16	. .	120 14 34.3	− 0.3
	20	Weisse 1232		9	0 22.80	− 0.76	− 34.97	49 52 7.48	+ 4 24.64	+ 1 10.1	22 59 47.07	− 3.52	101 4 3.4	+22.3
	21	Lalande 45504		9	9 50.88	− 0.77	− 34.97	51 0 1.68	+ 4 27.71	+ 1 13.0	23 9 15.14	− 3.56	102 12 3.6	+21.8
	22	ψ Aquarii		6	10 21.86	− 0.75	− 34.97	48 32 5.88	+ 3 51.67	+ 1 6.9	23 9 46.14	− 3.57	99 43 25.7	+22.7
	23	Weisse 228		9	13 31.96	− 0.78	− 34.98	51 38 1.85	+ 2 53.79	+ 1 14.6	23 12 56.20	− 3.58	102 48 31.4	+21.6
	24	θ Piscium		9	22 38.21	− 0.59	**− 35.02**	33 6 0.62	+ 2 37.55	+ 38.4	23 22 2.64	. .	84 15 37.8	− 3.1
	25	ι Piscium		9	34 32.26	− 0.60	**− 35.02**	33 50 3.48	+ 3 12.40	+ 39.7	23 33 56.67	. .	85 0 16.8	− 3.4
	26	ω Piscium		9	53 54.58	− 0.59	**− 34.96**	32 36 0.42	+ 3 53.23	+ 37.9	23 53 18.99	. .	83 46 52.7	− 3.8
	27	α Andromedæ		9	2 56.91	− 0.35	**− 35.01**	10 24 0.35	+ 2 29.47	+ 10.9	0 2 21.55	. .	61 33 1.9	− 3.5
	28	γ Pegasi		9	7 49.14	− 0.50	**− 34.97**	24 18 2.22	+ 2 58.51	+ 26.8	0 7 13.63	. .	75 27 48.7	− 2.4
	29	12 Ceti		9	24 40.70	− 0.69	**− 35.05**	43 26 . .	. . .	. .	0 24 4.99	. .	94 36 . .	. .
	30	Polaris		2	16 53.55	+21.65	− 35.05	310 10 . .	. . .	. .	1 16 40.15	. .	1 19 . .	. .
	31	ο Piscium		9	39 50.01	− 0.56	**− 35.05**	30 16 . .	. . .	. .	1 39 14.39	. .	81 26 . .	. .
	32	β Arietis		8	48 47.77	− 0.44	**− 35.03**	18 36 . .	. . .	. .	1 48 12.26	. .	69 46 . .	. .
	33	50 Cassiopeæ		9	54 7.02	+ 0.95	− 35.07	327 0 . .	. . .	. .	1 53 32.90	. .	18 8 . .	. .
	34	ζ¹ Ceti		8	7 25.17	− 0.57	**− 35.06**	30 32 . .	. . .	. .	2 6 49.52	. .	81 42 . .	. .
	35	ζ² Ceti		9	22 33.63	− 0.57	**− 35.07**	30 54 . .	. . .	. .	2 21 57.97	. .	82 4 . .	. .
	36	γ² Ceti		9	37 51.72	− 0.62	**− 35.15**	36 4 . .	. . .	. .	2 37 16.00	. .	87 15 . .	. .
	37	α Ceti		9	56 47.30	− 0.61	**− 35.13**	35 12 . .	. . .	. .	2 56 11.59	. .	86 22 . .	. .
15, W.	38	γ² Ursæ Minoris		9	21 26.76	+ 0.99	− 36.93	326 36 4.02	+ 3 22.07	− 40.3	15 20 50.82	. .	17 45 7.0	− 0.4
	39	α Cor. Bor.		9	30 20.23	− 0.23	**− 36.80**	11 42 . .	. . .	. .	15 29 43.07	. .	62 53 . .	. .
	40	α Serpentis		9	39 7.11	− 0.42	**− 36.94**	32 2 4.38	+ 3 10.99	+ 38.4	15 38 29.76	. .	83 12 15.0	− 2.4
	41	ε Serpentis		9	45 35.88	− 0.44	**− 36.96**	34 0 4.00	+ 2 56.31	+ 41.4	15 44 58.51	. .	85 10 2.9	− 3.1
	42	ε Cor. Bor.		9	53 20.88	− 0.23	**− 36.90**	11 36 4.65	+ 4 16.50	+ 12.6	15 52 43.72	. .	62 46 55.0	− 2.6
	43	β¹ Scorpii		7	59 15.33	− 0.65	**− 37.05**	58 18 . .	. . .	. .	15 58 37.75	. .	109 29 . .	. .
16	44	Sun I, N.		9	36 21.68	− 0.68	− 36.93	61 51 57.40	+ 4 21.83	+ 1 53.7	17 35 44.07	+71.10	113 4 34.1	. .
	45	Sun II, S.		8	38 43.88	− 0.68	− 36.93	62 25 57.60	+ 2 53.88	+ 1 56.2	17 38 6.27	−71.10	113 37 8.9	. .
S.	46	η Aquarii		3	29 58.34	− 0.47	**− 36.98**	39 32 2.75	+ 3 48.18	+ 50.5	22 29 20.84	. .	90 43 2.6	− 3.1
	47	λ Aquarii		9	47 8.56	− 0.55	**− 37.08**	47 2 8.25	+ 2 24.49	+ 1 5.7	22 46 30.97	. .	98 11 59.6	− 3.0
	48	α Piscis Australis		9	51 49.04	− 0.80	**− 37.11**	69 2 4.25	+ 3 27.98	+ 2 38.9	22 51 11.20	. .	120 14 32.3	− 1.9
	49	α Pegasi		9	59 33.83	− 0.32	**− 37.01**	24 16 2.65	+ 2 20.38	+ 27.6	22 58 56.47	. .	75 25 11.8	− 3.2
	50	ψ Aquarii		9	10 23.72	− 0.56	− 37.05	48 32 5.90	+ 3 48.52	+ 1 9.3	23 9 46.11	− 3.54	99 43 24.9	+22.5

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
2	30.29	37.9	35.5	ZENITH-POINT CORR.	1	— 8.0	− 16 16.2	.	− 16 24.2
10	30.27	36.8	34.0	″	44	— 8.0	+ 16 17.4	.	+ 16 9.4
19	29.65	40.5	38.3	″	45	— 8.0	− 16 17.4	.	− 16 25.4
37	29.66	34.8	35.3	46. One bisection. 1 + 56.04					
38	29.85	25.0	23.3	2 to 10 + 56.64					
45	29.80	27.4	26.2	18 to 28 + 57.28					
46	29.81	26.8	24.2	38 to 45 + 56.87					
				46 to 50 + 56.94					

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
Dec.					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
16, S.	1	Weisse 228		9	13 34.01	− 0.60	− 37.05	51 37 59.58	+ 2 53.07	+ 1 17.3	23 12 56.36	− 3.55	102 48 31.1	+21.4
	2	θ Piscium		9	22 40.02	− 0.41	**− 37.03**	33 6 . .	. . .	. .	23 22 2.55	. .	84 16 . .	. .
	3	ω Piscium		9	53 56.51	− 0.41	**− 37.09**	32 36 2.80	+ 3 51.18	+ 39.3	23 53 19.02	. .	83 46 54.5	− 2.2
	4	α Andromedæ		9	2 58.76	− 0.16	**− 37.08**	10 24 4.18	+ 2 26.07	+ 11.3	0 2 21.52	. .	61 33 2.7	− 2.8
	5	γ Pegasi		9	7 51.09	− 0.32	**− 37.12**	24 18 3.50	+ 2 56.52	+ 27.7	0 7 13.69	. .	75 27 48.9	− 2.3
	6	Polaris		6	16 51.53	+23.97	− 37.12	310 10 . .	. . .	. .	1 16 38.38	. .	1 19 . .	. .
	7	β Arietis		9	48 49.67	− 0.26	**− 37.13**	18 36 . .	. . .	. .	1 48 12.27	. .	69 46 . .	. .
	8	α Arietis		9	1 13.87	− 0.23	**− 37.14**	15 56 . .	. . .	. .	2 0 36.49	. .	67 5 . .	. .
	9	ξ¹ Ceti		9	7 27.04	− 0.38	**− 37.13**	30 32 . .	. . .	. .	2 6 49.51	. .	81 42 . .	. .
18, S.	10	λ Aquarii		9	47 10.32	− 0.62	**− 38.79**	47 2 3.18	+ 2 30.95	+ 1 5.4	22 46 30.94	. .	98 12 0.7	− 2.0
	11	α Piscis Australis		9	51 50.72	− 0.84	**− 38.78**	69 2 0.80	+ 3 33.75	+ 2 38.3	22 51 11.12	. .	120 14 34.1	− 0.5
	12	α Pegasi		9	59 35.62	− 0.42	**− 38.73**	24 16 3.65	+ 2 20.40	+ 27.5	22 58 56.43	. .	75 25 12.7	− 2.4
	13	Weisse 226		9	13 32.29	− 0.64	− 38.79	49 4 1.38	+ 3 23.63	+ 1 10.5	23 12 52.86	− 3.52	100 14 56.7	+22.1
	14	θ Piscium		9	22 41.90	− 0.50	**− 38.85**	33 5 59.18	+ 2 37.91	+ 39.9	23 22 2.60	. .	84 15 38.2	− 3.0
	15	γ Cephei		9	35 12.51	+ 1.44	− 38.81	321 52 5.58	+ 3 9.24	− 47.9	23 34 35.14	. .	13 0 48.1	− 1.3
	16	ω Piscium		.	. . .	. .	. .	32 36 1.05	+ 3 52.68	+ 39.3	23 53.3	. .	83 46 54.2	− 2.6
	17	α Andromedæ		9	3 0.57	− 0.29	**− 38.79**	10 24 5.50	+ 2 25.29	+ 11.3	0 2 21.44	. .	61 33 3.3	− 2.3
19, S.	18	λ Aquarii		9	47 11.01	− 0.52	**− 39.59**	47 2 6.90	+ 2 28.69	+ 1 5.6	22 46 30.89	. .	98 12 2.4	− 0.3
	19	α Piscis Australis		9	51 51.42	− 0.68	**− 39.66**	69 2 5.78	+ 3 29.59	+ 2 38.8	22 51 11.13	. .	120 14 35.4	+ 0.8
	20	α Pegasi		9	59 36.42	− 0.37	**− 39.59**	24 16 2.20	+ 2 22.55	+ 27.6	22 58 56.43	. .	75 25 13.6	− 1.6
	21	Weisse 226		9	13 33.07	− 0.53	− 39.65	49 4 4.12	+ 3 21.13	+ 1 10.6	23 12 52.89	− 3.50	100 14 57.0	+22.1
	22	θ Piscium		9	22 42.69	− 0.43	**− 39.72**	33 6 9.32	+ 2 28.54	+ 39.9	23 22 2.60	. .	84 15 39.0	− 2.3
	23	γ Cephei		9	35 13.79	+ 0.98	− 39.69	321 52 9.72	+ 3 2.56	− 47.9	23 34 35.08	. .	13 0 45.6	− 3.8
	24	ω Piscium		9	53 59.08	− 0.42	**− 39.69**	32 36 1.22	+ 3 52.19	+ 39.3	23 53 18.94	. .	83 46 53.9	− 3.0
	25	α Andromedæ		9	3 1.46	− 0.27	**− 39.71**	10 24 3.52	+ 2 26.95	+ 11.3	0 2 21.45	. .	61 33 3.0	− 2.6
26, S.	26	α Andromedæ		5	3 10.53	− 0.36	**− 48.79**	10 24 . .	. . .	. .	0 2 21.31	. .	61 33 . .	. .
	27	γ Pegasi		5	8 2.90	− 0.49	**− 48.88**	24 18 . .	. . .	. .	0 7 13.54	. .	75 28 . .	. .
	28	ι Ceti		5	14 18.20	− 0.70	− 48.88	48 18 . .	. . .	. .	0 13 28.62	− 3.73	99 28 . .	. .
	29	12 Ceti		5	24 54.36	− 0.66	**− 48.87**	43 26 . .	. . .	. .	0 24 4.81	. .	94 36 . .	. .
	30	α Cassiopeæ		5	34 42.93	+ 0.07	− 48.91	342 56 . .	. . .	. .	0 33 54.09	. .	34 6 . .	. .
	31	β Ceti		5	38 33.48	− 0.78	**− 48.99**	57 26 . .	. . .	. .	0 37 43.79	. .	108 38 . .	. .
	32	δ Piscium		5	43 27.22	− 0.56	− 48.92	31 52 . .	. . .	. .	0 42 37.74	− 4.09	83 3 . .	. .
	33	μ Andromedæ		5	51 6.33	− 0.24	− 48.93	0 58 . .	. . .	. .	0 50 17.16	− 4.72	52 8 . .	. .
	34	Polaris		8	17 1.02	+18.56	− 48.96	310 10 . .	. . .	. .	1 16 30.62	. .	1 19 . .	. .
	35	ν Piscium		5	36 11.44	− 0.57	− 48.99	33 56 . .	. . .	. .	1 35 21.88	− 4.40	85 6 . .	. .
	36	ε Cassiopeæ		5	46 51.17	+ 0.29	− 49.01	335 46 . .	. . .	. .	1 46 2.45	− 7.24	26 54 . .	. .
	37	50 Cassiopeæ		5	54 20.45	+ 0.77	− 49.02	327 0 . .	. . .	. .	1 53 32.20	. .	18 8 . .	. .
	38	γ Andromedæ		5	57 34.63	− 0.19	− 49.02	357 4 . .	. . .	. .	1 56 45.42	− 5.70	48 14 . .	. .
	39	α Arietis		5	1 25.80	− 0.41	**− 48.99**	15 56 . .	. . .	. .	2 0 36.36	. .	67 5 . .	. .
	40	67 Ceti		5	12 0.00	− 0.68	− 49.04	45 46 . .	. . .	. .	2 11 10.28	− 4.35	96 58 . .	. .
	41	ξ² Ceti		4	22 47.49	− 0.55	**− 49.04**	30 54 . .	. . .	. .	2 21 57.88	. .	82 4 . .	. .
	42	δ Ceti		5	34 20.36	− 0.62	− 49.07	39 0 . .	. . .	. .	2 33 30.67	− 4.61	90 11 . .	. .
	43	γ² Ceti		5	38 5.60	− 0.59	**− 49.13**	36 4 . .	. . .	. .	2 37 15.93	. .	87 15 . .	. .
	44	η Eridani		5	51 34.08	− 0.70	− 49.09	48 10 . .	. . .	. .	2 50 44.29	− 4.46	99 22 . .	. .
28, W.	45	Comet 1882 II		11	23 44.27	− 0.88	− 52.57	68 42 1.18	+ 2 10.60	+ 2 37.5	7 22 50.82	. .	119 53 10.5	. .
	46	α² Geminorum		9	28 3.26	− 0.23	**− 52.53**	6 42 7.30	+ 2 56.55	+ 7.3	7 27 10.46	. .	57 51 32.3	− 1.6
	47	α Canis Minoris		9	34 5.77	− 0.51	**− 52.55**	33 18 7.28	+ 3 32.55	+ 40.6	7 33 12.69	. .	84 28 41.6	− 1.6
	48	β Geminorum		9	39 4.60	− 0.28	**− 52.64**	10 32 3.15	+ 3 6.70	+ 11.5	7 38 11.75	. .	61 41 42.5	− 2.3
	49	λ Ursæ Min., S. P.		4	41 7.35	−29.19	− 52.57	307 48 4.58	+ 4 9.67	− 1 19.2	19 39 45.59	. .	358 57 16.2	− 1.2
30, W.	50	α Piscis Australis		9	52 6.70	− 0.80	**− 54.95**	69 2 18.40	+ 3 16.94	+ 2 37.4	22 51 11.04	. .	120 14 33.9	− 0.6

No.	Barom.	At. Ther.	Ex. Ther.	*For summary of the constants of reduction see page 3.*	No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	in.	°	°			′ ″	′ ″	″	′ ″
5	29.83	25.2	23.4	ZENITH-POINT CORR.					
9	. .	. .	22.2	″					
11	30.23	33.8	32.2						
17	30.24	32.6	28.8	13, 14, 21, 22. Four bisections. 1 to 5 + 56.94					
19	30.33	34.8	32.5	10 to 17 + 57.16					
25	30.32	33.2	31.0	18 to 25 + 56.40					
47	30.24	29.4	26.2	45 to 49 + 59.04					
49	30.24	29.4	26.2	50 + 58.15					
50	30.08	33.9	32.9						

DATE AND OBS'R.	Number.	OBJECT.	Magnitude.	Threads.	MEAN THREAD.	CORRECTIONS. Inst.	CORRECTIONS. Clock.	ZENITH DIST. SOUTH, FROM CIRCLES.	CORRECTIONS. Instrument.	CORRECTIONS. Refraction.	APPARENT RIGHT ASCENSION.	Miscellaneous Correction.	APPARENT NORTH-POLAR DISTANCE.	Miscellaneous Correction.
					m. s.	s.	s.	° ′ ″	′ ″	′ ″	h. m. s.	s.	° ′ ″	″
Dec. 30, W.	1	α Pegasi . . .	.	9	59 51.57	− 0.38	**− 54.86**	24 16 7.25	+ 2 18.66	+ 27.4	22 58 56.32	. .	75 25 14.5	− 1.8
	2	Weisse 226 . .	.	9	13 48.26	− 0.60	− 54.88	49 4 5.42	+ 3 20.32	+ 1 9.9	23 12 52.78	− 3.40	100 14 56.8	+21.5
	3	θ Piscium . . .	.	9	22 57.77	− 0.46	**− 54.88**	33 6 7.90	+ 2 30.84	+ 39.6	23 22 2.42	. .	84 15 39.5	− 2.7
	4	ι Piscium . . .	.	9	34 51.77	− 0.46	**− 54.84**	33 50 9.00	+ 3 7.74	+ 40.8	23 33 56.41	. .	85 0 18.7	− 2.8
	5	γ Cephei . . .	.	4	35 28.06	+ 1.58	− 54.90	321 52 5.22	+ 3 9.15	− 47.5	23 34 34.74	. .	13 0 48.1	− 1.5
	6	δ Geminorum . .	.	9	14 6.10	− 0.30	**− 55.35**	16 38 . .	. . .	. .	7 13 10.48	. .	67 48 . .	. .
	7	Comet 1882 II .	.	2	17 51.50	− 0.80	− 55.32	68 24 0.58	+ 4 25.83	+ 2 35.4	7 16 55.38	. .	119 37 23.0	. .
	8	a^2 Geminorum . .	.	8	28 5.99	− 0.20	**− 55.25**	6 42 20.95	+ 2 42.22	+ 7.3	7 27 10.46	. .	57 51 31.7	− 2.2
	9	α Canis Minoris . .	.	9	34 8.59	− 0.46	**− 55.38**	33 18 8.65	+ 3 30.64	+ 40.6	7 33 12.80	. .	84 28 41.1	− 2.3
	10	λ Ursæ Min., s. p. .	.	3	41 6.57	−26.61	− 55.34	307 48 4.22	+ 4 9.90	− 1 19.3	19 39 44.62	. .	358 57 16.0	− 0.8
31, W.	11	λ Aquarii . . .	.	9	47 27.59	− 0.77	**− 56.04**	47 2 5.92	+ 2 30.57	+ 1 4.6	22 46 30.79	. .	98 12 2.3	− 1.1
	12	α Piscis Australis .	.	9	52 8.01	− 1.05	**− 56.03**	69 2 7.55	+ 3 29.81	+ 2 36.3	22 51 10.93	. .	120 14 34.9	+ 0.4
	13	α Pegasi . . .	.	9	59 52.86	− 0.52	**− 56.01**	24 16 4.18	+ 2 22.76	+ 27.2	22 58 56.31	. .	75 25 15.3	− 1.1
	14	Weisse 226 . .	.	9	13 49.57	− 0.79	− 56.03	49 4 5.52	+ 3 20.77	+ 1 9.6	23 12 52.75	− 3.38	100 14 57.1	+21.4
	15	ο Cephei . . .	.	7	14 45.30	+ 0.74	− 56.03	331 22 1.38	+ 3 27.97	− 32.9	23 13 50.01	. .	22 31 17.7	− 1.1
	16	θ Piscium . . .	.	9	22 59.09	− 0.62	**− 56.05**	33 6 3.02	+ 2 36.01	+ 39.4	23 22 2.44	. .	84 15 39.6	− 2.8
	17	ι Piscium . . .	.	9	34 53.11	− 0.62	**− 56.04**	33 50 6.50	+ 3 11.32	+ 40.6	23 33 56.46	. .	85 0 19.6	− 2.0

No.	Barom.	At. Ther.	Ex. Ther.
	in.	°	°
5	30.09	33.0	32.0
10	30.13	26.5	24.5
12	30.15	37.8	37.1
17	30.14	36.3	34.4

For summary of the constants of reduction see page 3.

7, 8, 10. One bisection.
2. Four bisections.

ZENITH-POINT CORR.

″

1 to 5 + 58.15
7 to 10 + 59.31
11 to 17 + 58.35

No.	Parallax.	Semi-diam.	Def. Illum.	Sum.
	′ ″	′ ″	″	′ ″

OBSERVATIONS

WITH THE

XXVI-INCH EQUATORIAL.

1882.

OBSERVATIONS

WITH

THE XXVI-INCH EQUATORIAL.

Date.	Object observed.	Estimated position angle.	Washington Time.	Micrometer I.	Micrometer II.	Washington Time.	Position Circle. Ver. I.	Position Circle. Ver. II.	Eye-piece.	Image.	Observer.	Remarks.
1882.		°	h. m.	r.	r.	h. m.	°	°				
Jan. 2	HYPERION	340	6 40.6	55.364	64.070	6 34.1	172.55	. . .	3 A	4	H.	Faint.
	Satellite of NEPTUNE .	180	7 7.1	63.176	64.976	6 57.1	139.50	. . .	6 A	3	H.	Very faint.
	Deimos	70	9 58.6	58.825	64.070	9 50.6	73.82	. . .	3 A	4	H.	Faint but well seen. Moon nearly full; only 7° distant. Phobos just seen at 7^h 30^m. Position angle estimated 245°.
3	HYPERION	310	7 27.6	77.928	64.070	7 20.6	18.45	. . .	3 A	2	H.	Very faint.
	Satellite of NEPTUNE .	70	7 51.1	62.861	65.225	7 42.1	73.22	. . .	6 A	2	H.	Extremely faint. Full moon.
7	HYPERION	270	8 32.4	85.103	64.068	8 24.9	47.52	. . .	3 A	4	H.	Faint. Foggy. Another object near; 10″ more distant. Doubtful if this is HYPERION.
7	Satellite of NEPTUNE .	220	8 55.9	62.470	65.747	8 47.9	103.60	. . .	6 A	3	H.	Very faint. Haze.
9	Deimos	245	8 13.5	69.049	64.067	8 7.0	75.28	. . .	3 A	2	H.	Faint. Phobos barely glimpsed at 8^h on preceding side. Poor images.
	HYPERION	260	8 42.5	82.142	64.067	8 36.0	61.95	. . .	3 A	2	H.	
	Satellite of NEPTUNE .	50	9 6.0	65.429	62.650	8 58.0	79.40	. . .	6 A	2	H.	
11	HYPERION	230	7 22.1	72.398	64.070	7 10.8	94.72	. . .	3 A	2	H.	Clouds.
	Deimos	70	. . .	. . .	. . .	7 51.1	74.70	. . .	3 A	2	H.	Faint. Clouds.
14	HYPERION	110	6 45.2	48.699	64.071	6 37.2	32.18	. . .	3 A	2	H.	Faint. Sky thick. Parallel, 49°.50.
19	Satellite of NEPTUNE .	210	8 36.5	65.506	62.613	8 27.5	109.52	. . .	6 A	2	H.	Faint. Parallel, 49°.50.
Feb. 1	HYPERION	220	6 35.1	73.240	64.064	6 28.6	87.80	. . .	3 A	3	H.	Parallel, 49°.50.
	Hastings' Double Star .	250	. . .	64.014	64.122	4.2	71.20	. . .	5 A	3	H.	
	β Leporis	280	. . .	63.796	64.346	4.6	39.80	. . .	3 A	2	H.	
	OΣ 149	300	. . .	64.135	63.986	5.2	195.40	. . .	5 A	2	H.	
2	HYPERION	180	6 37.1	69.983	64.065	6 31.1	137.48	. . .	3 A	2	H.	Faint.
	Satellite of NEPTUNE .	30	6 59.6	62.426	65.685	6 53.1	91.70	. . .	6 A	2	H.	
	HYPERION	180	. . .	. . . .	. . .	7 42.6	140.38	. . .	3 A	2	H.	Very faint.
3	HYPERION	130	6 31.7	55.193	64.074	6 26.2	9.00	. . .	3 A	3	H.	Faint.
	Satellite of NEPTUNE .	10	6 52.7	62.787	65.282	6 45.2	117.80	. . .	6 A	2	H.	Faint.
6	Satellite of NEPTUNE .	200	6 44.3	65.246	62.888	6 36.8	121.90	. . .	6 A	3	H.	Very faint.
	Hastings' Double Star .	70	. . .	64.021	64.130	4.4	70.80	. . .	5 A	3	H.	Mag. 8–9.
	o Eridani, B and C . .	120	. .	64.389	63.747	4.7	20.60	. . .	3 A	2	H.	
	o Eridani, A and B . .	100	. . .	55.806	72.325	4.8	33.65	. . .	3 A	2	H.	

Date.	Object observed.	Estimated position angle.	Washington Time.	Micrometer I.	Micrometer II.	Washington Time.	Position Circle. Ver. I.	Position Circle. Ver. II.	Eye-piece.	Image.	Observer.	Remarks.
1882.		°	h. m.	r.	r.	h. m.	°	°				
Feb. 6	o Eridani, A and D . .	125	. . .	67.620	60.507	5.1	21.72	. . .	3 A	2	H.	
	β Leporis	280	. . .	63.801	64.351	6.0	34.30	. . .	3 A	3	H.	
8	Satellite of NEPTUNE .	40	7 3.9	62.451	65.688	6 56.9	94.00	. . .	6 A	3	H.	
	Hastings' Double Star .	70	. . .	64.130	64.019	4.6	72.90	. . .	6 A	3	H.	Mags. 8 and 8½.
	o Eridani, A and B . .	110	. . .	55.843	72.312	4.9	33.90	. . .	3 A	3	H.	Clouds.
15	Satellite of NEPTUNE .	0	6 59.6	65.014	63.111	6 53.6	131.50	. . .	6 A	2	H.	Faint. Parallel, 49°.50. Star images very blazing.
17	o Eridani, B and C . .	110	. . .	63.734	64.398	4.8	22.10	. . .	3 A	4	H.	
	o Eridani, A and D . .	110	. . .	60.536	67.634	5.0	22.10	. . .	3 A	3	H.	
	o Eridani, A and B . .	100	. . .	55.844	72.334	5.2	33.88	. . .	3 A	3	H.	
	β Leporis	280	. . .	63.816	64.345	5.5	37.1	. . .	3 A	2	H.	
	OΣ 149	310	. . .	64.154	63.988	5.9	25.8	. . .	6 A	2	H.	Reading of position angle is correct to-night.
	Castor	240	. . .	63.479	64.660	6.2	87.9	. . .	3 A	3	H.	
	ζ Cancri A and B . .	85	. . .	64.162	63.985	6.6	66.3	. . .	5 A	2	H.	
	ζ Cancri $\frac{A+B}{2}$ and C	140	. . .	64.642	63.513	6.8	186.9	. . .	5 A	2	H.	
23	Hastings' Double Star .	60	. . .	64.028	64.138	5.3	74.8	. . .	5 A	3	H.	
	OΣ 149	300	. . .	64.154	64.004	5.6	195.2	. . .	5 A	2	H.	This star is a wedge and ρ is doubtful.
	Castor	230	. . .	63.492	64.652	5.9	86.4	. . .	.	2	H.	Images blurred. Parallel, 49°.50.
24	OBERON	190	11 0.6	60.387	67.732	10 55.1	123.42	. . .	5 A	3	H.	TITANIA is in nearly same position as OBERON; distance about 18″. URANUS visible to naked eye at 11ʰ M. T. in moonlight. Parallel, 49°.50.
25	TITANIA	190	10 59.6	60.746	67.377	10 52.1	305.7	. . .	5 A	3	H.	
	OBERON	190	11 17.1	66.058	62.067	11 8.1	302.55	. . .	5 A	3	H.	Faint.
27	*Sirius*	.	. . .	65.039	63.043	7.8	96.8	. . .	3 A	2	F.	
Mar. 2	*Sirius*	.	. . .	63.072	65.058	8.0	97.3	. . .	3 A	2	F.	
4	*Sirius*	.	. . .	65.053	63.061	6.7	98.1	. . .	3 A	.	F.	Parallel, 49°.5.
11	*Sirius*	40	. . .	63.076	65.063	7.0	96.9	. . .	3 A	3	F.	
	G. A. 6, A and B . . .	10	. . .	64.132	63.992	7.6	128.6	. . .	5 A	3	H.	Star of 10th mag. $\alpha = 7^h\ 33^m.5$ $\delta = +5°\ 32'$.
	ζ Cancri A and B . . .	80	. . .	63.985	64.128	7.9	65.5	. . .	5 A	3	H.	
	ζ Cancri $\frac{A+B}{2}$ and C	130	. . .	64.609	63.497	8.1	9.4	. . .	5 A	2	H.	
13	*Sirius*	.	. . .	63.010	65.045	6.8	97.2	. . .	3 A	2	F.	Unsteady.
	G. A. 6	10	. . .	63.995	64.138	7.6	132.1	. . .	5 A	2	H.	
	Castor	230	. . .	63.474	64.652	7.9	266.8	. . .	3 A	2	H.	Images confused.
	ξ Ursæ Majoris	260	. . .	64.258	63.871	9.2	234.9	. . .	3 A	2	H.	
	OBERON	10	10 6.9	60.973	67.158	9 59.9	304.15	. . .	5 A	2	H.	Parallel, 229°.50. Ther. 34°. Poor images. Clouds.
14	*Sirius*	40	. . .	65.064	63.051	7.1	97.2	. . .	3 A	3	F.	
	OBERON	15	10 3.4	59.689	68.380	9 55.9	305.02	. . .	5 A	2	H.	

Date.	Object observed.	Estimated position angle.	Washington Time.	Micrometer I.	Micrometer II.	Washington Time.	Position Circle. Ver. I.	Position Circle. Ver. II.	Eye-piece.	Image.	Observer.	Remarks.
1882.		°	h. m.	r.	r.	h. m.	°	°				
Mar. 14	TITANIA	195	10 16.9	66.780	61.317	10 10.9	305.78	. . .	5 A	2	H.	TITANIA a little fainter than OBERON, which is very faint for its distance; but sky is not clear and images poor.
22	*Sirius*	40	. . .	63.096	Clouds.	7.6	97.6	. . .	3 A	2	H.	Very unsteady.
23	*Sirius*	40	. . .	63.093	65.009	6.5	97.4	. . .	3 A	3	H.	Unsteady.
	Castor	230	. . .	64.610	63.488	6.9	86.1	. . .	3 A	2	H.	
	ζ Cancri, A and B . .	70	. . .	63.985	64.151	7.1	67.3	. . .	5 A	2	H.	
	ζ Cancri $\frac{A+B}{2}$ and C	140	. . .	64.618	63.482	7.3	187.8	. . .	5 A	2	H.	
	ξ Ursæ Majoris	260	. . .	63.857	64.255	9.3	236.2	. . .	5 A	2	H.	
	OBERON	190	9 34.8	67.736	60.360	9 26.8	125.22	. . .	5 A	2	H.	Faint.
	TITANIA	190	9 44.8	60.945	67.233	. . .	125.22	. . .	5 A	2	H.	Faint. The above are observations of satellites of URANUS. They are very near together and of equal brightness. Sky thick.
24	*Sirius*	40	. . .	63.048	65.015	7.2	95.6	. . .	3 A	2	H.	Very unsteady.
25	*Sirius*	40	. . .	65.001	63.073	6.8	97.3	. . .	3 A	3	H.	
	Castor	230	. . .	64.618	63.467	7.1	85.4	. . .	3 A	3	H.	
	ζ Cancri, A and B . .	70	. . .	63.974	64.124	7.5	65.5	. . .	5 A	2	H.	
	ζ Cancri . . . . . $\frac{A+B}{2}$ and C	130	. . .	64.605	63.469	7.7	187.8	. . .	5 A	2	H.	
	ξ Ursæ Majoris	260	. . .	63.838	64.244	9.1	235.0	. . .	3 A	2	H.	Images blurred.
	TITANIA	190	9 16.9	66.021	61.980	9 7.9	126.4	. . .	5 A	2	H.	Excessively faint. Sky thick.
28	*Sirius*	40	. . .	65.025	63.075	7.2	95.2	. . .	3 A	2	H.	Very unsteady.
	OBERON	15	9 0.6	59.399	68.720	8 53.6	123.30	. . .	5 A	2	H.	Oberon brighter than TITANIA.
	TITANIA	15	9 15.1	60.583	67.529	9 7.6	123.50	. . .	5 A	2	H.	Bad images. Parallel, 47°.90. Stars twinkle very much to naked eye.
29	*Sirius*	40	. . .	65.012	63.081	7.1	96.0	. . .	3 A	3	H.	
	Σ 1216	170	. . .	64.028	64.098	8.1	150.5	. . .	6 A	2	H.	
	ξ Ursæ Majoris	260	. . .	63.871	64.251	9.6	234.0	. . .	3 A	2	H.	
	OBERON	15	9 33.1	68.496	59.602	9 25.6	123.50	. . .	5 A	3	H.	
	TITANIA	15	9 47.1	61.456	66.650	9 39.6	123.0	. . .	5 A	3	H.	Faint. Parallel, 47°.90.
30	OBERON	15	9 26.7	60.743	67.321	9 16.7	123.95	. . .	5 A	2	H.	Very faint. Moonlight. Wind.
31	*Sirius*	40	. . .	63.062	65.030	7.5	95.2	. . .	3 A	2	H.	Unsteady.
Apr. 11	TITANIA	190	9 1.7	66.791	61.360	8 48.2	124.8	. . .	5 A	2	H.	Faint.
	OBERON	15	9 40.7	68.670	59.499	9 29.2	123.38	. . .	5 A	2	H.	Clock running badly. Much delay. Parallel, 47°.90. Thermometer, 31°. Bad images.
12	*o* Leonis	80	. . .	64.004	64.124	9.0	55.6	. . .	5 A	2	H.	Clock failed.
	ξ Ursæ Majoris	260	. . .	63.839	64.265	9.7	235.6	. . .	5 A	2	H.	Clock failed.
	OBERON	15	9 41.8	67.978	60.167	9 34.3	303.88	. . .	5 A	2	H.	Clock very troublesome to-night.
16	OBERON	190	8 58.0	67.548	60.551	8 49.0	122.82	. . .	5 A	2	H.	Another satellite barely visible in $p = 15°$ $s = 12''$. Probably TITANIA.
17	*o* Leonis	80	. . .	64.006	64.108	9.0	54.3	. . .	5 A	2	H.	
	ξ Ursæ Majoris	260	. . .	63.857	64.259	9.3	235.7	. . .	3 A	2	H.	

Date.	Object observed.	Estimated position angle.	Washington Time.	Micrometer I.	Micrometer II.	Washington Time.	Position Circle. Ver. I.	Position Circle. Ver. II.	Eye-piece.	Image.	Observer.	Remarks.
1882.		°	h. m.	r.	r.	h. m.	°	°				
Apr. 17	OBERON	195	9 15.0	68.498	59.538	9 5.5	123.20	...	5 A	2	H.	Very unsteady. Parallel, 47°.90.
18	Σ 1216	170	...	64.029	64.086	9.2	144.5	...	6 A	3	H.	
	o Leonis	80	...	64.100	64.012	9.4	52.4	...	6 A	2	H.	
	OBERON	195	8 40.6	59.520	68.621	8 33.6	123.48	...	6 A	2	H.	Faint.
	TITANIA	195	8 56.1	66.972	61.160	8 48.1	122.7	...	6 A	2	H.	Faint. Sky hazy. Both satellites faint. OBERON brighter than TITANIA. Parallel, 47°.90.
20	TITANIA	190	8 34.7	66.241	61.820	8 25.2	125.9	...	6 A	2	H.	Very faint. Bad images.
24	o Leonis	80	...	64.011	64.093	9.6	52.8	...	6 A	2	H.	
	TITANIA	15	8 18.4	61.212	66.896	8 11.9	123.5	...	6 A	3	H.	
	OBERON	15	8 32.9	68.574	59.505	8 25.9	122.98	...	6 A	3	H.	
	42 Com. Ber.	190	...	64.006	64.118	11.8	129.0	...	6 A	2	H.	
	Σ 1757	70	...	63.826	64.293	12.0	69.0	...	5 A	3	H.	Parallel, 47°.90.
25	OBERON	15	...	...	...	8 39.0	124.18	...	5 A	2	H.	Faint. Clouds.
May 1	OBERON	195	8 10.2	59.392	68.655	7 59.7	123.10	...	6 A	2	H.	Faint. Moonlight.
	TITANIA	15	8 27.7	61.355	66.719	8 19.2	121.9	...	6 A	2	H.	Very faint. TITANIA a little fainter than OBERON. Strong moonlight. Parallel, 47°.90.
2	TITANIA	15	8 2.8	67.404	60.687	7 54.8	122.6	...	5 A	2	H.	Faint.
	OBERON	195	8 54.3	68.142	59.994	8 47.8	123.32	...	5 A	2	H.	Faint. TITANIA a little brighter than OBERON. Cord broke at $8^h\ 7^m$.
18	Σ 1757	70	...	63.842	64.282	13.2	66.9	...	3 A	2	H.	Driving clock stopping and running badly. Parallel, 47°.90.
20	42 Com. Ber.	190	...	64.004	64.106	12.6	124.6	...	5 A	2	H.	
	Σ 1757	70	...	63.823	64.287	12.8	67.8	...	3 A	2	H.	Images blurred.
25	...	.	...	...	...	...	...	...	..	..	..	Parallel, 47°.95.
26	42 Com. Ber.	190	...	64.019	64.126	12.6	124.0	...	5 A	2	H.	
	Σ 1757	70	...	64.297	63.836	12.9	68.1	...	5 A	2	H.	
	Σ 1785	210	...	63.860	64.254	13.1	99.0	...	5 A	2	H.	
	0Σ 270	350	...	63.176	64.974	13.4	146.8	...	3 A	2	H.	
	Σ 1819	15	...	63.930	64.198	13.8	123.4	...	5 A	2	H.	
	Σ 1909	250	...	63.550	64.568	14.3	256.0	...	3 A	2	H.	
29	42 Com. Ber.	190	...	64.128	64.015	12.8	126.2	...	5 A	2	H.	
	Σ 1757	70	...	64.301	63.831	13.1	67.0	...	5 A	2	H.	
	0Σ 270	350	...	63.207	64.941	13.5	146.0	...	3 A	2	H.	
	Σ 1819	15	...	64.196	63.944	13.8	122.6	...	5 A	2	H.	
	Σ 1909	260	...	64.563	63.582	14.1	256.8	...	5 A	2	H.	
	Σ 1888	270	...	63.684	64.476	14.5	46.2	...	3 A	2	H.	Parallel, 47°.90.
June 2	25 Canum Venat.	160	...	64.111	64.021	12.9	162.4	...	5 A	2	H.	
	Σ 1820	60	...	64.295	63.841	13.3	250.4	...	5 A	2	H.	
	Σ 1863	90	...	64.016	64.120	13.6	226.3	...	5 A	2	H.	
	Σ 1909	240	...	64.568	63.554	13.8	257.3	...	5 A	2	H.	
	Σ 1934	30	...	63.403	64.734	14.2	284.7	...	5 A	2	H.	

Date.	Object observed.	Estimated position angle.	Washington Time.	Micrometer I.	Micrometer II.	Washington Time.	Position Circle. Ver. I.	Position Circle. Ver. II.	Eye-piece.	Image.	Observer.	Remarks.
1882.		°	h. m.	r.	r.	h. m.	°	°				
June 2	0Σ 296	300	. . .	63.919	64.221	14.5	182.2	. . .	5 A	2	H.	
	μ^2 Bootis	120	. . .	64.015	64.127	14.7	197.1	. . .	5 A	2	H.	
	σ Cor. Bor.	200	. . .	63.695	64.442	15.2	117.0	. . .	5 A	2	H.	Parallel, 49°.70.
5	Σ 1820	70	. . .	63.841	64.291	13.4	251.2	. . .	5 A	2	H.	
	Σ 1934	30	. . .	64.723	63.380	13.8	285.0	. . .	5 A	2	H.	
	0Σ 296	310	. . .	63.911	64.221	14.0	181.8	. . .	5 A	2	H.	
	σ Cor. Bor.	200	. . .	63.692	64.464	15.2	116.4	. . .	5 A	2	H.	Images blazing and very unsteady.
6	25 Canum Venat.	160	. . .	64.024	64.111	12.0	167.4	. . .	5 A	2	H.	
	Σ 1863	90	. . .	64.007	64.133	13.3	225.8	. . .	5 A	2	H.	
	μ^2 Bootis	120	. . .	63.997	64.139	13.6	195.2	. . .	5 A	2	H.	
	ξ Bootis	280	. . .	63.686	64.488	13.9	49.3	. . .	5 A	2	H.	
	Σ 1909	250	. . .	64.580	63.542	14.1	257.4	. . .	5 A	2	H.	
	η Cor. Bor.	140	. . .	64.008	64.127	14.4	175.5	. . .	5 A	2	H.	Blazing. Parallel, 47°.90.
7	25 Canum Venat.	150	. . .	64.018	64.112	12.8	165.7	. . .	5 A	2	H.	
	0Σ 270	350	. . .	63.166	64.950	13.0	145.3	. . .	5 A	2	H.	
	Σ 1785	220	. . .	64.259	63.869	13.2	98.0	. . .	3 A	2	H.	
	Σ 1819	20	. . .	63.923	64.199	13.5	123.1	. . .	5 A	2	H.	
	Σ 1867	10	. . .	63.948	64.196	13.7	124.7	. . .	5 A	2	H.	
	ξ Bootis	270	. . .	63.663	64.477	14.0	47.0	. . .	5 A	2	H.	Clouds.
	η Cor. Bor	140	. . .	64.119	64.009	14.3	182.5	. . .	5 A	2	H.	
	μ^2 Bootis	120	. . .	64.000	64.130	14.6	196.4	. . .	5 A	2	H.	
	σ Cor. Bor	200	. . .	63.697	64.443	14.8	113.7	. . .	5 A	2	H.	
	ξ Scorpii, A and B	20	. . .	64.176	63.962	15.0	126.0	. . .	3 A	2	H.	Blurred images.
	ξ Scorpii $\frac{A+B}{2}$ and C	70	. . .	63.330	64.805	15.2	69.8	. . .	3 A	2	H.	Blurred images.
	49 Serpentis	330	. . .	64.444	63.644	15.4	168.8	. . .	3 A	2	H.	
8	Σ 1785	250	. . .	63.876	64.255	13.2	97.0	. . .	5 A	2	H.	
	Σ 1867	20	. . .	63.949	64.181	13.5	119.0	. . .	5 A	2	H.	
	η Cor. Bor	140	. . .	64.120	64.018	13.8	182.5	. . .	5 A	2	H.	
	σ Cor. Bor	200	. . .	63.692	64.439	14.3	114.1	. . .	3 A	2	H.	
	49 Serpentis	350	. . .	63.659	64.467	14.6	168.4	. . .	5 A	2	H.	
	ξ Scorpii, A and B	10	. . .	64.175	63.938	14.9	126.7	. . .	5 A	2	H.	
	ξ Scorpii $\frac{A+B}{2}$ and C	70	. . .	63.352	64.797	15.0	73.2	. . .	5 A	2	H.	Clouds and bad images.
9	ξ Bootis	270	. . .	63.677	64.444	14.3	47.9	. . .	3 A	2	F.	Cloudy.
13	42 Com. Ber	.	. . .	63.966	64.149	13.6	305.6	. . .	5 A	3	F.	
	Σ 1757	70	. . .	63.840	64.295	14.1	246.8	. . .	5 A	3	F.	
	Σ 1785	230	. . .	63.840	64.270	14.5	281.5	. . .	5 A	2	F.	

Date.	Object observed.	Estimated position angle.	Washington Time.	Micrometer I.	Micrometer II.	Washington Time.	Position Circle. Ver. I.	Position Circle. Ver. II.	Eye-piece.	Image.	Observer.	Remarks.
1882.		°	h. m.	r.	r.	h. m.	°	°				
June 13	Σ 1819	20	. . .	63.890	64.252	14.9	303.8	. . .	5 A	2	F.	
	ξ Bootis	270	. . .	64.451	63.644	15.2	225.8	. . .	5 A	2	F.	
	Σ 1909	240	. . .	64.578	63.594	15.6	258.2	. . .	5 A	2	F.	
	μ_2 Bootis	120	. . .	64.186	63.956	16.0	196.4	. . .	5 A	2	F.	
	OΣ 296	310	. . .	64.231	63.900	16.6	5.5	. . .	5 A	2	F.	Parallel, 47°.9.
21	42 Com. Ber	190	. . .	64.162	63.973	14.7	303.6	. . .	5 A	2	F.	
	Σ 1757	70	. . .	63.823	64.278	15.1	244.9	. . .	5 A	2	F.	
	Σ 1785	230	. . .	63.868	64.267	15.3	96.9	. . .	5 A	. .	F.	
	ξ Bootis	270	. . .	63.721	64.464	15.6	224.7	. . .	5 A	2	F.	Parallel, 47°.9.
22	Σ 1909	240	. . .	64.526	63.552	16.3	256.4	. . .	5 A	2	F.	
	μ_2 Bootis	120	. . .	64.153	63.995	16.6	21.5	. . .	5 A	2	F.	
	OΣ 296	310	. . .	64.245	63.919	. .	4.8	. . .	5 A	2	F.	
23	42 Com. Ber	.	. . .	64.156	63.972	14.4	303.2	. . .	5 A	2	F.	
	Σ 1757	70	. . .	64.250	63.796	14.7	246.6	. . .	5 A	2	F.	
	Σ 1785	230	. . .	64.275	63.867	14.9	278.9	. . .	5 A	2	F.	
	Σ 1819	15	. . .	64.183	63.941	15.3	302.3	. . .	5 A	2	F.	
	Σ 1909	240	. . .	64.561	63.576	15.6	257.5	. . .	5 A	2	F.	
	OΣ 296	310	. . .	64.238	63.920	15.9	183.3	. . .	5 A	2	F.	
27	Σ 1819	20	. . .	64.201	63.947	15.1	302.6	. . .	5 A	2	F.	
	μ^2 Bootis	120	. . .	64.186	63.969	16.0	192.1	. . .	5 A	2	F.	
	σ Cor. Bor	210	. . .	64.418	63.686	16.6	291.8	. . .	5 A	2	F.	Par., 47°.9. Images blurred.
29	η Cor. Bor	150	. . .	64.025	64.115	14.9	177.3	. . .	5 A	2	H.	
	ξ Scorpii, A and B	15	. . .	64.175	63.955	16.1	123.2	. . .	5 A	2	H.	
	ξ Scorpii $\frac{A+B}{2}$ and C	70	. . .	63.340	64.799	16.3	71.7	. . .	5 A	2	H.	
	49 Serpentis	330	. . .	64.446	63.687	16.6	167.6	. . .	5 A	2	H.	
	λ Ophiuchi	40	. . .	63.910	64.221	16.8	98.8	. . .	5 A	2	H.	Parallel, 47°.9.
July 5	λ Ophiuchi	50	. . .	63.917	64.219	15.4	97.3	. . .	5 A	2	H.	Clouds.
6	λ Ophiuchi	40	. . .	63.915	64.217	15.9	103.3	. . .	5 A	2	H.	
	ζ Herculis	100	. . .	63.920	64.223	16.6	28.3	. . .	5 A	3	H.	
	Σ 2120	250	. . .	64.626	63.524	17.0	66.8	. . .	5 A	3	H.	
	μ^1 Herculis	260	. . .	64.008	64.157	17.6	61.0	. . .	5 A	2	H.	Difficult to observe.
8	λ Ophiuchi	40	. . .	63.934	64.210	15.8	96.5	. . .	5 A	3	H.	
	ζ Herculis	110	. . .	63.937	64.195	16.0	209.9	. . .	5 A	3	H.	
	Σ 2120	250	. . .	63.529	64.627	16.3	66.8	. . .	5 A	3	H.	
	μ^1 Herculis	260	. . .	64.148	64.004	16.6	59.8	. . .	6 A	2	H.	Adjusted objective.
	τ Ophiuchi	260	. . .	64.227	63.889	17.1	64.9	. . .	5 A	2	H.	
	70 Ophiuchi	60	. . .	63.848	64.300	17.3	84.5	. . .	5 A	2	H.	Parallel, 47°.9.

Date.	Object observed.	Estimated position angle.	Washington Time.	Micrometer I.	Micrometer II.	Washington Time.	Position Circle. Ver. I.	Position Circle. Ver. II.	Eye-piece.	Image.	Observer.	Remarks.
1882.		°	h. m.	r.	r.	h. m.	°	°				
July 10	ζ Herculis	110	. . .	63.916	64.217	15.8	209.4	. . .	5 A	3	H.	
	μ^1 Herculis	260	. . .	64.008	64.140	16.7	53.8	. . .	5 A	2	H.	
11	ζ Herculis	110	. . .	63.911	64.218	16.0	35.2	. . .	5 A	2	H.	
15	ζ Herculis	110	. . .	64.205	63.926	15.6	215.1	. . .	5 A	2	H.	
	36 Ophiuchi	220	. . .	63.639	64.519	16.2	118.4	. . .	3 A	2	H.	
	μ^1 Herculis	250	. . .	64.145	64.006	16.5	240.5	. . .	5 A	2	H.	
	τ Ophiuchi	240	. . .	64.252	63.898	17.2	65.6	. . .	3 A	2	H.	
	70 Ophiuchi	60	. . .	63.850	64.310	17.5	80.0	. . .	3 A	2	H.	
	Σ 2375	120	. . .	63.835	64.329	18.0	24.6	. . .	3 A	2	H.	
23	36 Ophiuchi	210	. . .	63.621	64.501	16.1	120.4	. . .	3 A	2	H.	
	τ Ophiuchi	260	. . .	63.896	64.250	16.4	63.4	. . .	3 A	2	H.	
	70 Ophiuchi	60	. . .	63.818	64.310	16.6	81.4	. . .	3 A	2	H.	
24	ξ Scorpii, A and B	20	. . .	64.196	63.950	16.0	126.8	. . .	3 A	2	F.	Parallel, 47°.9.
	ξ Scorpii $\frac{A+B}{2}$ and C	70	. . .	63.360	64.784	16.2	73.1	. . .	3 A	2	F.	
	σ Cor. Bor	210	. . .	63.706	64.406	16.6	296.1	. . .	3 A	2	F.	
	λ Ophiuchi	65	. . .	63.905	64.259	17.4	283.3	. .	3 A	2	F.	
	Σ 2120	255	. . .	63.531	64.579	17.9	245.7	. . .	3 A	2	F.	
25	36 Ophiuchi	210	. . .	63.645	64.511	16.8	115.4	. . .	3 A	2	H.	
	70 Ophiuchi	60	. . .	63.841	64.301	17.5	80.7	. . .	3 A	3	H.	
	Σ 2375	130	. . .	63.834	64.301	17.7	25.9	. . .	3 A	3	H.	
27	36 Ophiuchi	250	. . .	64.538	63.638	17.6	120.0	. . .	3 A	2	H.	
	70 Ophiuchi	60	. . .	63.841	64.309	17.9	83.8	. . .	3 A	3	H.	Parallel, 51°.33.
28	70 Ophiuchi	60	. . .	63.868	64.324	17.4	85.5	. . .	3 A	2	F.	
	τ Ophiuchi	260	. . .	63.906	64.282	17.6	71.3	. . .	3 A	2	F.	Parallel, 51°.3. Observing bad.
Aug. 9	ξ Scorpii, A and B	15	. . .	63.954	64.215	17.0	308.4	. . .	3 A	2	F.	
	ξ Scorpii $\frac{A+B}{2}$ and C	65	. . .	63.338	64.795	17.1	256.3	. . .	3 A	2	F.	
	σ Cor. Bor	210	. . .	63.713	64.484	17.3	116.1	. . .	3 A	2	F.	Clouds.
10	70 Ophiuchi	60	. . .	63.853	64.307	18.0	84.5	. . .	3 A	2	H.	
	Σ 2375	130	. . .	63.846	64.306	18.3	208.5	. . .	3 A	2	H.	Parallel, 51°.35.
11	ξ Scorpii, A and B	15	. . .	64.256	63.948	17.1	309.0	. . .	3 A	3	F.	
	ξ Scorpii $\frac{A+B}{2}$ and C	65	. . .	64.800	63.412	17.2	254.6	. . .	3 A	3	F.	
	λ Ophiuchi	40	. . .	64.269	63.939	17.4	287.7	. . .	3 A	3	F.	
	σ Cor. Bor	210	. . .	64.439	63.682	17.7	294.6	. . .	3 A	3	F.	
	ζ Herculis	100	. . .	64.283	63.944	18.3	215.6	. . .	3 A	3	F.	
	Σ 2120	255	. . .	64.598	63.595	18.6	248.8	. . .	3 A	3	F.	
	70 Ophiuchi	60	. . .	64.336	63.825	19.3	275.2	. . .	3 A	3	F.	Parallel, 51°.3.

Date.	Object observed.	Estimated position angle.	Washington Time.	Micrometer I.	Micrometer II.	Washington Time.	Position Circle. Ver. I.	Position Circle. Ver. II.	Eye-piece.	Image.	Observer.	Remarks.
1882.		°	h. m.	r.	r.	h. m.	°	°				
Aug. 14	ζ Herculis	100	. . .	64.265	63.931	18.3	223.0	. . .	3 A	3	F.	
	Σ 2120	250	. . .	64.633	63.597	18.8	249.5	. . .	3 A	3	F.	
	τ Ophiuchi	240	. . .	64.270	63.893	19.6	248.2	. . .	3 A	3	F.	
	70 Ophiuchi	60	. . .	64.353	63.852	19.8	276.3	. . .	3 A	2	F.	Parallel, 51°.3.
16	λ Ophiuchi	40	. . .	64.224	63.923	17.8	286.6	. . .	3 A	3	F.	
	τ Ophiuchi	250	. . .	64.284	63.878	18.2	245.4	. . .	3 A	3	F.	
	70 Ophiuchi	50	. . .	63.836	64.312	19.4	274.7	. . .	3 A	3	F.	Parallel, 51°.3.
24	70 Ophiuchi	60	. . .	63.870	64.332	17.6	87.5	. . .	3 A	2	H.	
	Σ 2375	120	. . .	63.868	64.319	17.9	27.9	. . .	3 A	2	H.	
	Σ 2422	110	. . .	64.168	64.037	18.1	44.8	. . .	5 A	2	H.	
	Σ 2576	120	. . .	64.414	63.777	18.5	198.4	. . .	3 A	3	H.	
	δ Cygni	350	. . .	63.911	64.245	18.8	172.6	. . .	5 A	2	H.	
	OΣ 387	180	. . .	64.030	64.100	19.0	130.8	. . .	6 A	2	H.	Parallel, 51°.33.
25	ζ Herculis	100	. . .	63.894	64.251	17.6	224.3	. . .	3 A	2	F.	
	λ Ophiuchi	40	. . .	63.907	64.255	18.7	104.3	. . .	3 A	2	F.	
	70 Ophiuchi	45	. . .	63.875	64.273	18.5	95.3	. . .	3 A	2	F.	Cloudy.
29	70 Ophiuchi	45	. . .	63.854	64.274	19.0	95.9	. . .	3 A	2	F.	
	δ Cygni	330	. . .	63.901	64.227	19.4	182.0	. . .	3 A	2	F.	
	61 Cygni	120	. . .	66.110	62.006	19.8	22.6	. . .	3 A	2	F.	Parallel, 51°.3.
Sept. 1	OΣ 387	.	. . .	64.033	64.129	18.7	315.5	. . .	6 A	2	F.	
	δ Cygni	320	. . .	64.244	63.898	19.1	3.9	. . .	3 A	2	F.	
	61 Cygni	130	. . .	66.100	62.052	19.5	22.1	. . .	3 A	2	F.	Parallel, 51°.3.
6	δ Cygni	320	. . .	64.231	63.939	18.4	184.9	. . .	3 A	2	F.	
	OΣ 387	180	. . .	64.150	64.018	18.6	129.9	. . .	6 A	2	F.	
	61 Cygni	120	. . .	66.073	62.035	19.0	202.35	. . .	3 A	2	F.	
Oct. 2	61 Cygni	120	. . .	61.941	66.020	20.2	202.4	. . .	3 A	2	H.	Images blurred. Parallel, 51°.4, nearly.
3	Σ 2422	95	. . .	63.937	64.064	19.5	223.8	. . .	5 A	3	H.	
	Σ 2576	120	. . .	63.694	64.306	20.1	200.8	. . .	5 A	3	H.	
	δ Cygni	350	. . .	64.142	63.867	20.4	172.6	. . .	5 A	2	H.	
	OΣ 387	190	. . .	63.950	64.056	20.6	309.2	. . .	5 A	3	H.	
	61 Cygni	120	. . .	61.988	66.050	21.6	203.2	. . .	3 A	2	H.	Parallel, 231°.4
4	Σ 2422	95	. . .	63.926	64.069	19.3	223.6	. . .	5 A	3	H.	
	Σ 2576	120	. . .	64.299	63.705	20.3	200.5	. . .	5 A	2	H.	
	δ Cygni	330	. . .	63.847	64.164	20.5	174.3	. . .	5 A	2	H.	
	61 Cygni	120	. . .	61.944	66.049	20.8	22.8	. . .	5 A	2	H.	
	Satellite of Neptune	240	12 34.9	62.327	65.667	12 26.9	101.2	. . .	6 A	3	H.	
5	61 Cygni	120	. . .	66.027	61.936	19.9	202.7	. . .	3 A	3	H.	
	ζ Aquarii	330	. . .	63.657	64.322	21.2	171.0	. . .	3 A	2	H.	

Date.	Object observed.	Estimated position angle.	Washington Time.	Micrometer I.	Micrometer II.	Washington Time.	Position Circle. Ver. I.	Position Circle. Ver. II.	Eye-piece.	Image.	Observer.	Remarks.
1882.		°	h. m.	r.	r.	h. m.	°	°				
Oct. 5	0Σ 536	180	. . .	63.980	64.028	21.6	153.9	. . .	6 A	2	H.	
	Satellite of Neptune . . .	200	11 54.4	63.136	64.916	11 44.4	147.7	. . .	6 A	3	H.	Faint.
	HYPERION	. .	12 15.9	51.972	64.003	12 9.9	108.88	. . .	6 A	3	H.	Parallel, 51°.40.
6	61 Cygni	120	. . .	61.971	66.049	21.8	202.8	. . .	3 A	2	H.	
	ζ Aquarii	330	. . .	64.319	63.642	22.2	350.2	. . .	3 A	2	H.	
	Satellite of Neptune . . .	80	11 53.4	65.252	62.759	11 44.4	71.0	. . .	6 A	3	H.	Faint.
	HYPERION	0	12 11.9	53.873	64.001	12 6.4	141.82	. . .	3 A	3	H.	
7	Satellite of Neptune . . .	30	11 51.5	62.345	65.654	11 45.0	102.0	. . .	6 A	2	H.	Faint.
	HYPERION	330	. . .	. . .	. . .	12 7.5	177.38	. . .	3 A	4	H.	Water cut off and clock stopped. Parallel, 51°.40.
8	Satellite of Neptune . . .	350	12 36.5	63.181	64.812	12 25.5	157.4	. . .	6 A	2	H.	Fog. Very faint.
	HYPERION	300	12 59.0	48.524	63.998	12 51.5	200.30	. . .	3 A	3	H.	Fog. Satellite extremely faint.
	TITAN	180	13 9.5	55.864	72.133	13 4.5	142.0	. . .	3 A	3	H.	Fog. Parallel, 51°.40.
9	Satellite of Neptune . . .	250	11 59.0	65.324	62.682	11 50.0	74.6	. . .	6 A	2	H.	Misty sky. Faint.
	HYPERION	300	12 32.0	44.859	63.994	12 20.0	213.70	. . .	3 A	2	H.	
14	70 Ophiuchi (*b*)	190	. . .	57.386	70.638	20.0	303.52	. . .	3 A	2	H.	Very unsteady and blazing.
	70 Ophiuchi (*a*)	50	. . .	73.314	54.715	20.1	274.02	. . .	3 A	2	H.	
	Satellite of Neptune . . .	30	12 23.8	62.451	65.512	12 16.8	115.7	. . .	5 A	2	H.	Poor images.
15	70 Ophiuchi (*a*)	50	. . .	54.783	73.317	20.0	273.78	. . .	3 A	3	H.	
	70 Ophiuchi (*b*)	190	. . .	70.554	57.444	20.2	303.60	. . .	3 A	2	H.	Poor images to-night.
18	Satellite of Neptune . . .	60	11 26.5	62.540	65.476	11 18.0	80.5	. . .	6 A	2	H.	Faint.
	HYPERION	120	11 54.0	80.757	64.004	11 47.0	208.75	. . .	3 A	2	H.	
25	ζ Aquarii	340	. . .	64.304	63.645	21.9	169.9	. . .	3 A	3	H.	
Nov. 1	ζ Aquarii	320	. . .	64.268	63.602	22.0	170.1	. . .	3 A	2	F.	Clouds.
8	ζ Aquarii	320	. . .	63.658	64.339	23.1	167.3	. . .	3 A	2	F.	
	36 Andromedi	345	. . .	63.892	64.132	23.5	142.1	. . .	3 A	2	F.	Parallel, 51.°4.
Dec. 28	HYPERION	70	9 2.3	80.570	47.424	8 54.3	82.75	. . .	3 A	3	H.	
	Satellite of Neptune . . .	50	9 41.3	62.296	65.657	9 30.8	92.9	. . .	6 A	2	H.	Very unsteady. Parallel, 51°.8.
30	HYPERION	20	7 55.9	54.137	63.970	7 47.4	129.38	. . .	3 A	3	H.	Parallel, 51°.8.
31	Satellite of Neptune . . .	240	6 41.5	62.374	65.591	6 33.5	92.65	. . .	6 A	2	H.	Unsteady and faint.
	HYPERION	340	7 0.0	53.898	63.970	6 53.5	166.10	. . .	3 A	3	H.	

RESULTS OF OBSERVATIONS

WITH THE

XXVI-INCH EQUATORIAL.

1882.

6469—82——1

RESULTS OF OBSERVATIONS

WITH

THE XXVI-INCH EQUATORIAL.

RESULTS OF OBSERVATIONS OF THE SATELLITE OF NEPTUNE.

Date.	Washington Mean Time.	Position Angle.	Number of measures.	Weight.	Washington Mean Time.	Distance.	Number of measures.	Weight.	Observer.	Remarks.
1882.	h. m.	°			h. m.	″				
n. 2	6 57.1	180.0	4	3	7 7.1	8.95	3	3	H.	Very faint.
3	7 42.1	66.3	4	2	7 51.1	11.76	3	2	H.	Extremely faint.
7	8 47.9	215.9	4	3	8 55.9	16.30	1	3	H.	Very faint. Hazy.
9	8 58.0	60.1	4	2	9 6.0	13.83	3	2	H.	
19	8 27.5	210.0	4	2	8 36.5	14.39	3	2	H.	Faint.
eb. 2	6 53.1	47.8	4	2	6 59.6	16.22	3	2	H.	
3	6 45.2	21.7	4	2	6 52.7	12.41	3	2	H.	Faint.
6	6 36.8	197.6	4	3	6 44.3	11.73	3	3	H.	Very faint.
8	6 56.9	45.5	4	3	7 3.9	16.10	3	3	H.	
15	6 53.6	8.0	4	2	6 59.6	9.46	3	2	H.	Faint.
ct. 4	12 26.9	220.2	4	3	12 34.9	16.61	3	3	H.	
5	11 44.4	173.7	4	3	11 54.4	8.85	3	3	H.	Faint.
6	11 44.4	70.4	4	3	11 53.4	12.40	3	3	H.	Faint.
7	11 45.0	39.4	4	2	11 51.5	16.46	3	2	H.	Faint.
8	12 25.5	344.0	4	2	12 36.5	8.11	3	2	H.	Fog. Very faint.
9	11 50.0	246.8	4	2	11 59.0	13.14	3	2	H.	Faint. Misty sky.
14	12 16.8	25.7	4	2	12 23.8	15.23	3	2	H.	Poor images; not the satellite.
18	11 18.0	60.9	4	2	11 26.5	14.60	3	2	H.	Faint.
ec. 28	9 30.8	48.9	4	2	9 41.3	16.72	3	2	H.	Very unsteady.
31	6 33.5	229.2	4	2	6 41.5	16.00	3	2	H.	Unsteady and faint.

RESULTS OF OBSERVATIONS OF THE SATELLITES OF URANUS.

OBERON.

Date.	Washington Mean Time.	Position Angle.	Number of measures.	Weight.	Washington Mean Time.	Distance.	Number of measures.	Weight.	Observer.	Remarks.
1882.	h. m.	°			h. m.	″				
b. 24	10 55.1	196.08	4	3	11 0.6	36.53	3	3	H.	
25	11 8.1	196.55	4	3	11 17.1	19.85	3	3	H.	Faint.
ar. 13	9 59.9	15.35	4	2	10 6.9	30.76	3	2	H.	
14	9 55.9	14.48	4	2	10 3.4	43.23	3	2	H.	
23	9 26.8	194.28	4	2	9 34.8	36.69	3	2	H.	Faint.
28	8 53.6	14.60	4	2	9 0.6	46.36	3	2	H.	
29	9 25.6	14.40	4	3	9 33.1	44.25	3	3	H.	
30	9 16.7	13.95	4	2	9 26.7	32.72	3	2	H.	Very faint. Moonlight.
pril 11	9 29.2	14.52	4	2	9 40.7	45.62	3	2	H.	
12	9 34.3	14.02	4	2	9 41.8	38.85	3	2	H.	
16	8 49.0	195.08	4	2	8 58.0	34.80	3	2	H.	
17	9 5.5	194.70	4	2	9 15.0	44.57	3	2	H.	
18	8 33.6	194.42	4	2	8 40.6	45.27	3	2	H.	Faint.
24	8 25.9	14.92	4	3	8 32.9	45.11	3	3	H.	
25	8 39.0	13.72	4	2	. . . .	. . .	.	.	H.	Faint. Clouds.
ay 1	7 59.7	194.80	4	2	8 10.2	46.08	3	2	H.	Faint. Moonlight.
2	8 47.8	194.58	4	2	8 54.3	40.53	3	2	H.	Faint.

RESULTS OF OBSERVATIONS OF THE SATELLITES OF URANUS—Continued.

TITANIA.

Date.	Washington Mean Time.	Position Angle.	Number of measures.	Weight.	Washington Mean Time.	Distance.	Number of measures.	Weight.	Observer.	Remarks.
1882.	h. m.	°			h. m.	"				
Feb. 25	10 52.1	193.8	4	3	10 59.6	32.98	3	3	H.	
Mar. 14	10 10.9	193.7	4	2	10 16.9	27.17	3	2	H.	
23	9 44.8	194.3	4	2	9 44.8	31.28	3	2	H.	Faint.
25	9 7.9	193.1	4	2	9 16.9	20.07	3	2	H.	Excessively faint. Sky thick.
28	9 7.6	14.4	4	2	9 15.1	34.55	3	2	H.	
29	9 39.6	14.9	4	3	9 47.1	25.84	3	3	H.	Faint.
April 11	8 48.2	193.1	4	2	9 1.7	27.02	3	2	H.	Faint.
18	8 48.1	195.2	4	2	8 56.1	28.91	3	2	H.	Faint. Hazy sky.
20	8 25.2	192.0	4	2	8 34.7	21.95	3	2	H.	Very faint.
24	8 11.9	14.4	4	3	8 18.4	28.27	3	3	H.	
May 1	8 19.2	16.0	4	2	8 27.7	26.68	3	2	H.	Very faint.
2	7 54.8	15.3	4	2	8 2.8	33.41	3	2	H.	Faint.

RESULTS OF OBSERVATIONS OF THE SATELLITES OF SATURN.

TITAN.

Date.	Washington Mean Time.	Position Angle.	Number of measures.	Weight.	Washington Mean Time.	Distance.	Number of measures.	Weight.	Observer.	Remarks.
1882.	h. m.	°			h. m.	"				
Oct. 8	13 4.5	179.40	4	3	13 9.5	80.92	2	3	H.	Foggy.

HYPERION.

Date.	Washington Mean Time.	Position Angle.	Number of measures.	Weight.	Washington Mean Time.	Distance.	Number of measures.	Weight.	Observer.	Remarks.
Jan. 2	6 34.1	326.96	4	4	6 40.6	86.64	4	4	H.	Faint.
3	7 20.6	301.05	4	2	7 27.6	137.90	4	2	H.	Very faint.
7	8 24.9	271.98	4	4	8 32.4	209.32	4	4	H.	Faint. Foggy.
9	8 36.0	257.55	4	2	8 42.5	179.87	4	2	H.	
11	7 10.8	224.78	4	2	7 22.1	82.88	4	2	H.	Clouds.
14	6 37.2	107.32	4	2	6 45.2	152.96	4	2	H.	Faint.
Feb. 1	6 28.6	231.70	4	3	6 35.1	91.31	4	3	H.	
2	6 31.1	182.02	4	2	6 37.1	58.89	4	2	H.	Faint.
2	7 42.6	179.12	4	2	. . .	. .	.	.	H.	Very faint.
3	6 26.2	130.50	4	3	6 31.7	88.38	4	3	H.	Faint.
Oct. 5	12 9.9	32.52	4	3	12 15.9	119.72	4	3	H.	
6	12 6.4	359.58	4	3	12 11.9	100.79	4	3	H.	
7	12 7.5	324.02	4	4	. . .	. .	.	.	H.	Water cut off and clock stopped.
8	12 51.5	301.10	4	3	12 59.0	153.99	4	3	H.	Fog, and satellite extremely faint.
9	12 20.0	287.70	4	2	12 32.0	190.42	4	2	H.	
18	11 47.0	112.65	4	2	11 54.0	166.72	4	2	H.	
Dec. 28	8 54.3	59.05	4	3	9 2.3	164.92	2	3	H.	
30	7 47.4	12.42	4	3	7 55.9	97.85	4	3	H.	
31	6 53.5	335.70	4	3	7 0.0	100.24	4	3	H.	

RESULTS OF OBSERVATIONS OF THE SATELLITES OF MARS.

DEIMOS.

Date.	Washington Mean Time.	Position Angle.	Number of measures.	Weight.	Washington Mean Time.	Distance.	Number of measures.	Weight.	Observer.	Remarks.
1882.	h. m.	°			h. m.	"				
Jan. 2	9 50.6	65.69	4	4	9 58.6	52.22	4	4	H.	
9	8 7.0	244.14	4	2	8 13.5	49.31	4	2	H.	Faint.
11	7 51.1	64.85	2	2	. . .	. .	.	.	H.	Faint. Clouds.

CONJUNCTIONS OF THE SATELLITES OF SATURN.

MIMAS.

Date.	Washington Mean Time.	Position.	Weight.	Observer.	Remarks.
1882.	h. m.				
Oct. 5	13 11.4	Foll.	3	H.	Mimas at division of ring.
Nov. 8	8 44.2	S.	2	F.	

ENCELADUS.

Oct. 5	13 6.4	S.	3	H.
14	10 39.8	N.	1	H.
22	10 36.8	S.	3	F.

TETHYS.

Oct. 18	12 28.2	S.	3	H.
20	9 41.6	N.	2	H.
21	10 40.8	S.	2	F.
Nov. 22	10 9.3	N.	3	F.
23	9 54.8	N.	3	F.
24	9 23.8	N.	3	F.
Dec. 26	9 28.2	N.	2	H.
28	6 41.8	N.	3	H.

DIONE.

Dec. 16	8 37.8	N.	2	F.

RHEA.

Nov. 21	10 41.3	S.	2	F.

RESULTS OF OBSERVATIONS OF DOUBLE STARS.

Date.	Name of Star.	Approx. R. A. 1880.0.	Approx. N. P. D.	Position Angle.	Number of measures.	Distance.	Number of measures.	Weight.	Observer.	Remarks.
1882.		h. m.	° ′	°		″				
Nov. 8	36 Andromedæ	0 49.0	67 0	359.3	4	1.19	2	2	F.	
Feb. 6	Σ 518, A and B	4 9.8	97 47	105.85	4	82.17	2	2	H.	
6	B and C			118.9	4	3.19	2	2	H.	
6	A and D			117.78	4	35.37	2	2	H.	
8	A and B			105.60	4	81.92	2	3	H.	
17	B and C			117.4	4	3.30	2	4	H.	
17	A and D			117.4	4	35.31	2	3	H.	
17	A and B			105.62	4	82.02	2	3	H.	
Feb. 1	Hastings	4 29.5	70 30.8	248.3	4	0.54	2	3	H.	
6				68.7	4	0.54	2	3	H.	
8				66.6	4	0.55	2	3	H.	
23				64.7	4	0.55	2	3	H.	
Feb. 1	β Leporis	5 23.1	110 51	279.7	4	2.74	2	2	H.	
6				285.2	4	2.73	2	3	H.	
17				282.4	4	2.63	2	2	H.	
Feb. 1	0Σ 149	6 28.8	62 37	304.1	4	0.74	2	2	H.	
17				293.7	4	0.83	2	2	H.	
23				304.3	4	0.75	2	2	H.	
Feb. 17	Castor	7 26.9	57 51	231.6	4	5.87	2	3	H.	
23				233.1	4	5.77	2	2	H.	
Mar. 13				232.7	4	5.86	2	2	H.	Images confused.
23				233.4	4	5.58	2	2	H.	
25				234.1	4	5.73	2	3	H.	
Mar. 11	G. A. 6	7 33.4	84 28	10.9	4	0.70	2	3	H.	
13				7.4	4	0.71	2	2	H.	
Feb. 17	ζ Cancri, A and B	8 5.3	71 59	73.2	4	0.88	2	2	H.	
	$\frac{A+B}{2}$ and C			132.6	4	5.62	2	2	H.	
Mar. 11	A and B			74.0	4	0.71	2	3	H.	
	$\frac{A+B}{2}$ and C			130.1	4	5.53	2	2	H.	
Mar. 23	A and B			72.2	4	0.83	2	2	H.	
	$\frac{A+B}{2}$ and C			131.7	4	5.65	2	2	H.	
25	A and B			74.0	4	0.75	2	2	H.	
	$\frac{A+B}{2}$ and C			131.7	4	5.65	2	2	H.	
Mar. 29	Σ 1216	8 15.2	91 13	167.4	4	0.35	2	2	H.	
Apr. 12	ω Leonis	9 22.0	80 25	82.3	4	0.60	2	2	H.	
17				83.6	4	0.51	2	2	H.	
24				85.1	4	0.41	2	2	H.	
Mar. 13	ξ Ursæ Majoris	11 11.8	57 47	264.6	4	1.92	2	2	H.	
23				263.3	4	1.98	2	2	H.	Blurred images.
25				264.5	4	2.02	2	2	H.	Blurred images.
29				263.9	4	1.89	2	2	H.	
Apr. 12				262.3	4	2.12	2	2	H.	
17				262.2	4	2.00	2	2	H.	
Apr. 24	42 Com. Ber.	13 4.2	71 50	188.9	4	0.56	2	2	H.	
May 20				193.3	4	0.51	2	2	H.	
26				193.9	4	0.53	2	2	H.	
29				191.7	4	0.56	2	2	H.	
June 13				192.3	4	0.91	2	3	F.	
21				194.4	4	0.94	2	2	F.	
23				194.7	4	0.92	2	2	F.	
Apr. 24	Σ 1757	13 28.2	89 42	68.9	4	2.32	2	3	H.	
May 18				71.0	4	2.19	2	2	H.	
20				70.0	4	2.31	2	2	H.	Images blurred.
26				69.8	4	2.29	2	2	H.	
29				70.9	4	2.34	2	2	H.	
June 13				71.1	4	2.26	2	3	F.	
21				73.0	4	2.26	2	2	F.	
23				71.3	4	2.26	2	2	F.	

RESULTS OF OBSERVATIONS OF DOUBLE STARS—Continued.

Date.	Name of Star.	Approx. R. A. 1880.0.	Approx. N. P. D.	Position Angle.	Number of measures.	Distance.	Number of measures.	Weight.	Observer.	Remarks.
1882.		h. m.	° ′	°		″				
June 2	25 Can. Venat.	13 32.1	53 6	155.5	4	0.45	2	2	H.	
6				150.3	4	0.43	2	2	H.	
7				152.2	4	0.47	2	2	H.	
May 26	0Σ 270	13 41.6	71 56	351.1	4	8.95	2	2	H.	
29				351.9	4	8.63	2	2	H.	
June 7				352.6	4	8.87	2	2	H.	
May 26	Σ 1785	13 43.6	62 25	218.9	4	1.96	2	2	H.	
June 7				219.9	4	1.94	2	2	H.	
8				220.9	4	1.88	2	2	H.	
13				216.4	4	2.14	2	2	F.	
21				221.0	4	1.99	2	2	F.	
23				219.0	4	2.03	2	2	F.	
June 2	Σ 1820	14 8.8	34 7	67.5	4	2.26	2	2	H.	
5				66.7	4	2.24	2	2	H.	
May 26	Σ 1819	14 9.3	86 18	14.5	4	1.33	2	2	H.	
29				15.3	4	1.25	2	2	H.	
June 7				14.8	4	1.37	2	2	H.	
13				14.1	4	1.80	2	2	F.	
23				15.6	4	1.20	2	2	F.	
27				15.3	4	1.26	2	2	F.	
June 2	Σ 1863	14 34.0	37 51	91.6	4	0.52	2	2	H.	
6				92.1	4	0.63	2	2	H.	
June 7	Σ 1867	14 35.6	58 11	13.2	4	1.23	2	2	H.	
8				18.9	4	1.15	2	2	H.	
May 29	ξ Bootis	14 45.8	70 24	271.7	4	3.94	2	2	H.	
June 6				268.6	4	3.99	2	2	H.	
7				270.9	4	4.05	2	2	H.	
9				270.0	4	3.82	2	2	F.	
13				272.1	4	4.02	2	2	F.	
21				273.2	4	3.70	2	2	F.	
May 26	44 Bootis	14 59.9	41 53	241.9	4	5.07	2	2	H.	
29				241.1	4	4.88	2	2	H.	
June 2				240.5	4	5.16	2	2	H.	
6				240.6	4	5.05	2	2	H.	
13				239.7	4	4.90	2	2	F.	
22				241.5	4	4.95	2	2	F.	
23				240.4	4	4.80	2	2	F.	
June 2	Σ 1934	15 13.2	45 46	33.2	4	6.62	2	2	H.	
5				32.9	4	6.68	2	2	H.	
June 6	η Cor. Bor.	15 18.3	59 17	142.4	4	0.54	2	2	H.	
7				135.4	4	0.55	2	2	H.	
8				135.4	4	0.51	2	2	H.	
29				140.6	4	0.45	2	2	H.	
June 2	μ^2 Bootis	15 20.0	52 14	120.8	4	0.56	2	2	H.	
6				122.7	4	0.71	2	2	H.	
7				121.5	4	0.65	2	2	H.	
13				123.3	4	1.14	2	2	F.	
22				116.4	4	0.79	2	2	F.	
27				125.8	4	1.08	4	2	F.	
June 2	0Σ 296	15 22.3	45 34	315.7	4	1.50	2	2	H.	
5				316.1	4	1.54	2	2	H.	
13				314.2	4	1.55	2	2	F.	
22				314.9	4	1.62	2	2	F.	
23				314.6	4	1.58	2	2	F.	
June 7	ξ Scorpii, A and B	15 57.8	101 3	11.9	4	1.06	2	2	H.	Blurred images.
	$\frac{A+B}{2}$ and C . .	. . . . .	. . . . .	68.1	4	7.34	2	2	H.	
8	A and B	. . . . .	. . . . .	11.2	4	1.17	2	2	H.	
	$\frac{A+B}{2}$ and C . .	. . . . .	. . . . .	64.7	4	7.19	2	2	H.	Blurred images. Clouds.
29	A and B	. . . . .	. . . . .	14.7	4	1.09	2	2	H.	

RESULTS OF OBSERVATIONS OF DOUBLE STARS—Continued.

Date.	Name of Star.	Approx. R. A. 1880.0.	Approx. N. P. D.	Position Angle.	Number of measures.	Distance.	Number of measures.	Weight.	Observer.	Remarks.
1882.		h. m.	° ′	°		″				
June 29	ξ Scorpii, $\frac{A+B}{2}$ and C . .	. . . . .	. . . . .	66.2	4	7.26	2	2	H.	
July 24	A and B	. . . . .	. . . . .	11.1	4	1.22	2	2	F.	
	$\frac{A+B}{2}$ and C . .	. . . . .	. . . . .	64.8	4	7.08	2	2	F.	
Aug. 9	A and B	. . . . .	. . . . .	12.9	4	1.30	2	2	F.	
	$\frac{A+B}{2}$ and C . .	. . . . .	. . . . .	65.0	4	7.24	2	2	F.	
Aug. 11	A and B	. . . . .	. . . . .	12.3	4	1.53	2	3	F.	
	$\frac{A+B}{2}$ and C . .	. . . . .	. . . . .	66.7	4	6.90	2	3	F.	
June 7	49 Serpentis	16 7.7	76 9	329.1	4	3.98	2	2	H.	
8				329.5	4	4.02	2	2	H.	
29				330.3	4	3.77	2	2	H.	
June 2	σ Cor. Bor	16 10.3	55 50	200.9	4	3.72	2	2	H.	
5				201.5	4	3.84	2	2	H.	
7				204.2	4	3.71	2	2	H.	
8				203.8	4	3.72	2	2	H.	
27				206.1	4	3.64	2	2	F.	
July 24				201.8	4	3.48	2	2	F.	
Aug. 9				205.2	4	3.83	2	2	F.	Clouds.
11				206.7	4	3.76	2	3	F.	
June 29	λ Ophiuchi	16 24.9	87 45	39.1	4	1.55	2	2	H.	
July 5				40.6	4	1.50	2	2	H.	Clouds.
6				34.6	4	1.50	2	2	H.	
8				41.4	4	1.37	2	3	H.	
24				34.6	4	1.76	2	2	F.	
Aug. 11				33.6	4	1.64	2	3	F.	
16				34.7	4	1.50	2	3	F.	
25				37.0	4	1.73	2	2	F.	
July 6	ζ Herculis	16 36.8	58 11	109.6	4	1.51	2	3	H.	
8				108.0	4	1.28	2	3	H.	
10				108.5	4	1.50	2	2	H.	
11				102.7	4	1.53	2	2	H.	
15				102.8	4	1.39	2	2	H.	
Aug. 11				105.7	4	1.69	2	3	F.	
14				98.3	4	1.66	2	3	F.	
25				97.0	4	1.78	2	2	F.	
July 6	Σ 2120	17 0.0	61 44	251.1	4	5.48	2	3	H.	
8				251.1	4	5.46	2	3	H.	
24				252.2	4	5.21	2	2	F.	
Aug. 11				252.5	4	4.99	2	3	F.	
14				251.8	4	5.15	2	3	F.	
July 6	μ^1 Herculis	17 42.0	62 12	256.9	4	0.74	2	2	H.	Observing difficult.
8				258.1	4	0.72	2	2	H.	
10				264.1	4	0.66	2	2	H.	
15				257.4	4	0.69	2	2	H.	
July 8	τ Ophiuchi	17 56.5	98 11	253.0	4	1.68	2	2	H.	
13				252.3	4	1.76	2	2	H.	
23				254.5	4	1.76	2	2	H.	
28				250.0	4	1.82	2	2	F.	
Aug. 14				253.1	4	1.88	2	3	F.	
16				255.9	4	2.02	2	3	F.	
July 8	70 Ophiuchi	17 59.4	87 27	53.4	4	2.25	2	2	H.	
13				57.9	4	2.29	2	2	H.	
23				56.5	4	2.45	2	2	H.	
25				57.2	4	2.29	2	3	H.	
27				57.5	4	2.32	2	3	H.	
28				55.8	4	2.27	2	2	F.	
Aug. 10				56.8	4	2.26	2	2	H.	
24				53.8	4	2.30	2	2	H.	
11				46.1	4	2.54	2	3	F.	
14				45.0	4	2.49	2	3	F.	
16				46.6	4	2.37	2	3	F.	
25				46.0	4	1.98	2	2	F.	
July 29				45.4	4	2.09	2	2	F.	

RESULTS OF OBSERVATIONS OF DOUBLE STARS—Continued.

Date.	Name of Star.	Approx. R. A. 1880.0.	Approx. N. P. D.	Position Angle.	Number of measures.	Distance.	Number of measures.	Weight.	Observer.	Remarks.
1882.		h. m.	° ′	°		″				
ly 13	36 Ophiuchi	17 8.0	116 25	199.5	4	4.38	2	2	H.	
23				197.5	4	4.38	2	2	H.	
25				202.5	4	4.31	2	2	H.	
27				201.3	4	4.48	2	2	H.	
ly 15	Σ 2375	18 39.6	84 37	113.3	4	2.46	2	2	H.	
25				112.0	4	2.32	2	3	H.	
ug. 10				112.8	4	2.29	2	2	H.	
24				113.4	4	2.24	2	2	H.	
ug. 24	Σ 2422	18 52.3	64 3	96.5	4	0.65	2	2	H.	
ct. 3				97.6	4	0.63	2	3	H.	
4				97.8	4	0.71	2	3	H.	
ug. 24	Σ 2576	19 40.8	56 40	122.9	4	3.17	2	3	H.	
ct. 3				120.6	4	3.04	2	3	H.	
4				120.9	4	2.96	2	2	H.	
ug. 24	δ Cygni	19 41.2	45 10	328.7	4	1.66	2	2	H.	
29				319.3	4	1.62	2	2	F.	
pt. 1				317.4	4	1.72	2	2	F.	
6				316.4	4	1.45	2	2	F.	
ct. 3				328.8	4	1.37	2	2	H.	
4				327.1	4	1.58	2	2	H.	
ug. 24	OΣ 387	19 44.3	55 0	190.5	4	0.35	2	2	H.	
pt. 1				185.8	4	0.48	2	2	F.	
6				191.4	4	0.66	2	2	F.	
ct. 3				192.2	4	0.53	2	3	H.	
ug. 29	61 Cygni	21 1.1	51 53	118.7	4	20.41	2	2	F.	
pt. 1				119.2	4	20.13	2	2	F.	
6				119.0	4	20.18	2	2	F.	
ct. 2				119.0	4	20.29	2	2	H.	Images blurred.
3				118.2	4	20.20	2	2	H.	
4				118.6	4	20.41	2	2	H.	
5				118.7	4	20.35	2	3	H.	
6				118.6	4	20.28	2	2	H.	
ct. 5	ζ Aquarii	22 22.4	90 40	330.4	4	3.31	2	2	H.	
6				331.2	4	3.37	2	2	H.	
25				331.5	4	3.28	2	2	H.	
ov. 1				331.3	4	3.30	2	2	F.	
8				334.1	4	3.39	2	2	F.	
ct. 5	OΣ 536	22 52.6	81 16	167.5	4	0.24	2	2	H.	

OBSERVATIONS

MADE WITH THE

9.6-INCH EQUATORIAL.

1882.

THE 9.6-INCH EQUATORIAL.

This instrument was under the direction of Prof. J. R. EASTMAN, U. S. N., until October 18, assisted by the other observers on the Transit Circle and by Mr. A. S. FLINT, and was employed in 1882 in the observations of comets, occultations by the moon, and in the determination of the approximate corrections to the ephemerides of many of the minor planets. Prof. E. FRISBY, U. S. N., made several observations of comets.

The ephemerides of some of the minor planets were so much in error that it became necessary to determine the approximate corrections before these objects could be observed on the Transit Circle, and, without proper charts, this entailed a large expenditure of time and labor, which can only be appreciated by those who have been engaged in similar work. Although a large number of approximate corrections to the ephemerides of minor planets were obtained, it was deemed undesirable to publish the record when the planets were afterwards observed with the Transit Circle.

At the request of Commander W. T. SAMPSON, U. S. N., the 9.6-inch Equatorial was placed under his direction on October 18, 1882, after which date the work with the instrument ceased for the year.

OBSERVATIONS

MADE WITH THE

9.6-INCH EQUATORIAL.

Date.	Observer.	
1882. Sept. 16	Fl.	Jupiter's satellite I. Observed Oc. Re. at $13^h\ 13^m\ 54^s \pm 10^s$, W. M. T. "Satellite appeared wholly removed from planet's limb." Hazy.
		Jupiter's satellite II. Observed Ec. Dis. at $13^h\ 27^m\ 41^s$, W. M. T. "Haze thicker."
20	Fl.	Observed the occultation, immersion, of 21 Sagittarii at $9^h\ 15^m\ 6^s.3$, W. M. T.
21	Fl.	Jupiter's satellite II. Observed Ec. Dis. as follows: Began to fade at $16^h\ 3^m\ 35^s$. Disappeared at $16^h\ 4^m\ 17^s$, W. M. T.

A series of observations of Comet 1882 II was made with the 9.6-inch Equatorial, which has been published in full in Appendix I to the volume for 1880:

COMET 1882 III.

Date.	Observer.	Washington Mean Time.	$\Delta\alpha$	$\Delta\delta$	α App.	$\log \rho.\Delta$	δ App.	$\log \rho\Delta$	Star.
1882.		h. m. s.	m. s.	′ ″	h. m. s.		° ′ ″		
Sept. 18	F.	16 33 57.1	− 0 36.22	+ 7 23.9	7 27 24.06	9.725*n*	+ 12 40 54.6	0.636	1
19	F.	18 3 5.2	+ 1 14.38	− 2 37.8	7 29 29.15	9.251*n*	+ 11 47 0.9	0.624	2
28	F.	16 58 3.9	+ 1 24.20	− 0 46.2	7 49 47.35	9.420*n*	+ 1 59 2.2	0.726	3
Oct. 14	F.	15 38 4.2	− 0 3.41	− 7 17.2	8 41 0.54	9.599*n*	− 22 22 7.6	0.848	4

POSITIONS OF COMPARISON STARS.

Star.	α 1882.0.	Red. to App. Place.	δ 1882.0.	Red. to App. Place.	Authority.
	h. m. s.	s.	° ′ ″	″	
1	7 27 57.95	+ 2.76	+ 12 33 36.3	− 7.9	Transit Circle.
2	7 28 11.99	+ 2.78	+ 11 49 44.4	− 7.7	"
3	7 48 20.43	+ 2.72	+ 1 59 54.1	− 5.7	"
4	8 41 0.53	+ 3.42	− 24 14 32.2	− 18.2	"

CORRECTIONS

TO THE

NORTH-POLAR DISTANCES

OF

STARS OF THE AMERICAN EPHEMERIS,

GIVEN BY

OBSERVATIONS WITH THE TRANSIT CIRCLE.

1882.

CORRECTIONS

TO THE

NORTH-POLAR DISTANCES OF STARS OF THE AMERICAN EPHEMERIS,

GIVEN BY

OBSERVATIONS WITH THE TRANSIT CIRCLE IN 1882.

NOTE.—The North-Polar Distance for each star is taken from the American Ephemeris for 1882.0.

α ANDROMEDÆ . . { h. m. s. 0 2 17 / ° ′ ″ 61 33 40.01

			″
Feb.	6	R.	+ 0.2
	15	W.	+ 0.2
	18	W.	— 0.5
	25	S.	+ 0.1
	27	W.	— 1.1
March	2	R.	— 0.4
	3	W.	— 1.1
	10	R.	— 0.9
April	11	W.	— 2.7
	12	R.	— 1.9
	16	E.	— 2.3
	17	W.	— 1.9
	19	S.	— 1.8
	27	W.	— 3.1
	30	R.	— 3.1
May	2	E.	— 3.1
Sept.	15	W.	— 3.1
Oct.	31	W.	— 2.2
Nov.	11	S.	— 2.3
	14	S.	— 1.2
	15	W.	— 2.5
	21	S.	— 2.6
	23	S.	— 2.6
	24	W.	— 3.6
	25	W.	— 3.1
	27	W.	— 2.9
Dec.	3	W.	— 2.4
	6	W.	— 2.3
	11	S.	— 2.5
	12	S.	— 3.6
	14	S.	— 3.5
	16	S.	— 2.8
	18	S.	— 2.3
	19	S.	— 2.6
Mean			— 2.10
Div., Flex., etc. . . .			+ 2.29

γ PEGASI . . . . . { h. m. s. 0 7 10 / ° ′ ″ 75 28 21.15

			″
Feb.	15	W.	— 0.1
March	3	W.	— 0.8
April	11	W.	— 2.7
	12	R.	— 2.0
	16	E.	— 2.0
	27	W.	— 3.4
May	2	E.	— 2.6
Sept.	15	W.	— 2.7
Oct.	31	W.	— 1.8
Nov.	11	S.	— 3.0

γ PEGASI—Continued.

			″
Nov.	15	W.	— 2.9
	21	W.	— 3.7
	23	W.	— 2.5
	24	S.	— 2.0
	25	S.	— 3.5
	27	S.	— 2.6
Dec.	14	S.	— 2.4
	16	S.	— 2.3
Mean			— 2.39
Div., Flex., etc. . . .			+ 2.42

12 CETI . . . . . { h. m. s. 0 24 1 / ° ′ ″ 94 36 33.99

			″
Nov.	20	S.	— 2.7
	21	S.	— 2.5
	23	S.	— 3.1
	24	W.	— 3.2
	25	W.	— 3.1
	27	W.	— 3.0
Mean			— 2.93
Div., Flex., etc. . . .			+ 2.32

α CASSIOPEÆ . . . { h. m. s. 0 33 49 / ° ′ ″ 34 6 36.31

			″
Feb.	18	W.	— 0.7
	27	W.	0.0
March	2	R.	— 1.4
	3	W.	— 2.1
April	19	S.	— 1.2
	26	R.	— 1.7
	27	W.	— 1.7
	30	R.	— 2.7
May	8	R.	— 1.3
Oct.	31	W.	— 2.2
Nov.	21	W.	— 1.7
Mean			— 1.52
Div., Flex., etc. . . .			+ 1.58

α CASSIOPEÆ (Ref.).

			″
Oct.	31	W.	— 1.2
Nov.	21	W.	— 1.8
Mean			— 1.50
Div., Flex., etc. . . .			+ 0.19

β CETI . . . . . { h. m. s. 0 37 40 / ° ′ ″ 108 38 4.55

			″
Feb.	18	W.	— 2.1
	27	W.	— 2.5
March	2	R.	— 2.8
April	26	R.	— 0.4
	27	W.	(— 6.0)
Oct.	30	S.	— 3.4
Nov.	21	W.	— 2.1
	23	W.	— 3.1
	24	W.	— 3.2
	27	S.	— 2.9
Mean			— 2.50
Div., Flex., etc. . . .			+ 2.68

ε PISCIUM . . . . . { h. m. s. 0 56 49 / ° ′ ″ 82 44 43.79

			″
Nov.	14	S.	— 3.2
	21	W.	— 3.4
	23	S.	— 2.8
	24	W.	— 2.9
	25	W.	— 3.0
	27	W.	— 3.6
Dec.	6	W.	— 3.5
Mean			— 3.20
Div., Flex., etc. . . .			+ 2.56

β ANDROMEDÆ . . { h. m. s. 1 3 8 / ° ′ ″ 55 0 19.64

			″
Feb.	18	W.	— 1.1
	25	S.	— 0.4
	27	W.	— 0.2
March	2	R.	— 1.0
	3	W.	— 3.4
	10	R.	— 0.6
	23	W.	— 0.6
	30	R.	— 1.7
	31	W.	— 0.5
April	17	W.	— 0.6
	26	R.	— 0.3
	27	W.	— 3.3
	30	R.	— 2.4
May	2	E.	— 2.4
	16	R.	— 0.1
	25	W.	— 2.3
Oct.	30	S.	— 2.9
Nov.	14	S.	— 2.1
	21	S.	— 2.2

β ANDROMEDÆ—Continued.

			″
Nov.	23	W.	— 3.7
	24	S.	— 3.0
	25	S.	— 2.9
	27	S.	— 3.3
Dec.	6	W.	— 2.1
Mean			— 1.80
Div., Flex., etc. . . .			+ 2.15

POLARIS . . . . . { h. m. s. 1 15 30 / ° ′ ″ 1 19 13.06

			″
Feb.	18	W.	0.0
	25	S.	— 0.6
	27	W.	— 2.4
March	2	R.	— 0.3
	3	W.	— 5.4
	10	R.	— 3.0
	23	W.	— 1.7
	25	W.	— 2.1
	31	W.	— 1.6
April	1	E.	— 1.5
	11	W.	— 2.6
	12	R.	— 0.8
	16	E.	— 4.0
	17	W.	— 3.9
	19	S.	— 1.1
	26	R.	— 0.5
	27	W.	— 3.2
May	2	E.	— 4.1
	8	R.	— 0.4
	16	R.	— 1.0
	22	E.	— 2.7
	23	S.	— 0.9
	25	W.	— 2.1
	28	R.	— 3.0
	29	W.	— 2.4
Oct.	30	S.	— 1.9
Nov.	8	W.	— 1.2
	15	W.	— 2.3
	20	S.	— 2.1
	21	W.	— 2.1
	21	S.	— 2.1
	23	S.	— 2.8
	23	W.	— 2.5
	24	S.	— 3.2
	24	W.	— 2.2
	25	W.	— 3.4
	25	S.	— 1.4
	27	S.	— 2.9
	27	W.	— 3.4
	30	W.	— 1.5
	30	S.	— 1.6

Polaris—Continued.

				″
Dec.	6	W.	—	2.1
Mean			—	2.14
Div., Flex., etc.			+	1.46

Polaris (Ref.).

				″
March	2	R.	—	1.1
Div., Flex., etc.			+	0.09

	°	′	″
Polaris, S. P.	358	40	46.94

				″
April	7	R.	—	3.5
	13	R.	—	1.9
	17	E.	—	2.1
May	1	R.	—	2.0
	3	E.	—	2.2
	18	W.	+	0.3
	23	E.	—	1.1
	25	R.	—	2.0
	26	W.	—	1.0
	29	R.	—	1.8
June	2	R.	—	2.1
	5	S.	—	1.1
	6	R.	—	2.0
	7	W.	—	1.0
	8	E.	—	1.6
	13	S.	—	1.3
	21	S.	—	1.2
Aug.	10	W.	—	4.0
Sept.	15	W.	—	1.9
	19	S.	—	3.9
	20	W.	—	4.5
	21	S.	—	2.3
	29	W.	—	3.4
Oct.	9	W.	—	2.7
	13	W.	—	5.0
Nov.	2	W.	—	2.7
	5	S.	—	1.5
	14	W.	—	1.9
	18	W.	—	2.1
	20	W.	—	1.2
	22	W.	—	1.7
	23	W.	—	2.0
Mean			—	2.14
Div., Flex., etc.			+	1.51

	h.	m.	s.
η Piscium	1	25	10
	°	′	″
	75	15	46.57

				″
Feb.	18	W.	—	1.7
March	23	W.	—	3.8
	29	W.	—	2.7
Nov.	8	W.	—	2.7
	20	S.	—	2.2
Mean			—	2.62
Div., Flex., etc.			+	2.42

	h.	m.	s.
o Piscium	1	39	10
	°	′	″
	81	26	12.51

				″
Nov.	8	W.	—	2.6
	20	S.	—	3.5
Mean			—	3.05
Div., Flex., etc.			+	2.58

	h.	m.	s.
β Arietis	1	48	7
	°	′	″
	69	46	9.80

β Arietis—Continued.

				″
March	10	R.	—	0.1
	23	W.	—	0.3
	25	W.	+	0.1
May	8	R.	(+	1.6)
	16	R.	—	1.4
	22	E.	—	3.0
	23	S.	—	2.4
	25	W.	—	1.4
	28	R.	—	3.2
	29	W.	—	3.8
	30	E.	—	4.0
Nov.	8	W.	—	1.6
	20	S.	—	2.8
	30	W.	—	3.3
Mean			—	2.09
Div., Flex., etc.			+	2.33

	°	′	″
50 Cassiopeæ. S. P.	341	50	57.63

				″
June	7	W.	—	1.6
Div., Flex., etc.			+	1.19

	h.	m.	s.
α Arietis	2	0	31
	°	′	″
	67	5	46.42

				″
March	10	R.	—	0.6
	23	W.	—	0.2
	25	W.	—	0.3
	30	R.	—	2.3
May	8	R.	(+	3.3)
	16	R.	—	1.1
	22	E.	—	2.0
	25	W.	—	3.8
	28	R.	—	2.6
	29	W.	—	2.5
	30	E.	—	2.4
June	1	R.	—	2.5
Nov.	8	W.	—	3.1
Mean			—	1.95
Div., Flex., etc.			+	2.32

	h.	m.	s.
ξ¹ Ceti	2	6	45
	°	′	″
	81	42	27.05

				″
May	29	W.	—	3.6
July	9	W.	—	3.1
Nov.	15	W.	—	4.0
	30	W.	—	3.5
Mean			—	3.55
Div., Flex., etc.			+	2.58

	h.	m.	s.
ι Cassiopeæ, S. P.	2	19	21
	°	′	″
	336	52	14.62

				″
June	2	R.	—	0.5
	6	R.	+	1.4
Mean			+	0.45
Div., Flex., etc.			+	1.14

	h.	m.	s.
ξ² Ceti	2	21	53
	°	′	″
	82	4	10.30

				″
Oct.	30	S.	—	4.4
Div., Flex., etc.			+	2.58

	h.	m.	s.
γ² Ceti	2	37	11
	°	′	″
	87	15	44.24

				″
Jan.	11	E.	—	2.0
June	5	R.	—	2.8
	8	S.	—	2.4
July	9	W.	—	2.8
Oct.	30	S.	—	3.8
Nov.	15	W.	—	3.4
Mean			—	2.87
Div., Flex., etc.			+	2.51

	h.	m.	s.
α Ceti	2	56	7
	°	′	″
	86	22	26.71

				″
Jan.	11	E.	—	2.8
Feb.	1	S.	—	2.0
March	30	R.	—	2.5
	31	W.	—	0.7
April	12	W.	—	1.4
	13	R.	—	1.3
	18	W.	—	0.3
May	28	R.	—	2.9
	30	E.	—	1.6
June	1	R.	—	3.5
	5	R.	—	3.8
	8	S.	—	3.0
	13	R.	—	2.6
	14	W.	—	3.6
	16	S.	—	3.2
	19	E.	—	3.7
July	9	W.	—	3.1
Mean			—	2.47
Div., Flex., etc.			+	2.50

	h.	m.	s.
48 Cephei	3	5	24
	°	′	″
	12	42	4.09

				″
Jan.	19	R.	—	1.9
Feb.	2	R.	—	0.8
Mean			—	1.35
Div., Flex., etc.			+	1.49

	°	′	″
48 Cephei, S. P.	347	17	55.91

				″
Feb.	10	R.	—	1.9
June	6	R.	—	0.1
	22	R.	—	1.7
July	5	W.	—	0.8
Mean			—	1.12
Div., Flex., etc.			+	1.36

	h.	m.	s.
ζ Arietis	3	8	7
	°	′	″
	69	23	37.96

				″
Jan.	11	E.	—	2.7
	23	E.	—	2.3
Feb.	1	S.	—	1.4
Nov.	15	W.	—	3.1
Mean			—	2.38
Div., Flex., etc.			+	2.33

	h.	m.	s.
α Persei	3	15	54
	°	′	″
	40	33	36.55

				″
Jan.	11	E.	—	1.0
	19	R.	—	2.1
Feb.	2	R.	—	1.8
March	30	R.	—	1.8
	31	W.	—	0.7
April	12	W.	—	0.5
	13	R.	—	1.6
	18	W.	+	0.1
May	28	R.	—	1.0
	29	W.	—	0.3
June	1	R.	—	1.3
	5	R.	—	1.7
	8	S.	—	2.6
	13	R.	—	1.0
	14	W.	+	0.4
	16	S.	—	1.8
	19	E.	—	2.4
	23	E.	—	2.4
Nov.	15	W.	—	3.3
Mean			—	1.41
Div., Flex., etc.			+	1.51

α Persei (Ref.).

				″
May	28	R.	—	0.8
	29	W.	—	0.2
June	5	R.	—	1.2
Nov.	15	W.	—	0.8
Mean			—	0.75
Div., Flex., etc.			+	0.19

	h.	m.	s.
ε Eridani	3	27	22
	°	′	″
	99	51	30.24

				″
Jan.	19	R.	—	2.0
	27	E.	—	2.3
Feb.	2	R.	—	1.4
	6	R.	—	0.8
June	5	R.	—	4.1
Mean			—	2.12
Div., Flex., etc.			+	2.39

	h.	m.	s.
δ Persei	3	34	32
	°	′	″
	42	35	28.45

				″
Jan.	11	E.	—	2.3
Feb.	2	R.	—	2.0
April	12	W.	—	2.4
	13	R.	—	2.0
	20	S.	—	1.5
May	28	R.	—	2.1
June	14	W.	—	0.5
	21	R.	—	1.2
	23	E.	—	1.9
July	9	W.	—	1.4
Mean			—	1.73
Div., Flex., etc.			+	1.38

	h.	m.	s.
η Tauri	3	40	28
	°	′	″
	66	15	39.47

				″
Jan.	11	E.	—	2.3
	19	R.	—	2.2
	23	E.	—	2.3
	27	E.	—	3.4

η Tauri—Continued.

				″
Feb.	2	R.	—	2.7
	6	R.	—	1.0
April	12	W.	—	2.7
	13	R.	—	1.2
	17	E.	—	2.5
	18	W.	—	0.8
	28	W.	—	2.4
June	5	R.	—	2.9
	13	R.	—	2.0
	14	W.	—	1.8
	19	E.	—	4.4
	21	R.	—	2.6
	23	E.	—	4.0
July	9	W.	—	3.0
Nov.	15	W.	—	3.2
Mean			—	2.49
Div., Flex., etc.			+	2.34

ζ Persei . . . . . h. m. s. 3 46 43; ° ′ ″ 58 28 5.43

				″
Jan.	11	E.	—	1.0
	19	R.	—	1.3
	23	E.	—	1.7
Feb.	6	R.	—	1.4
April	12	W.	—	1.6
	13	R.	—	2.2
	17	E.	—	0.1
	18	W.	—	0.5
	28	W.	—	1.3
June	7	E.	—	1.9
	14	W.	—	1.0
	19	E.	—	2.8
	21	R.	—	1.4
	23	E.	—	3.4
	26	W.	—	2.5
July	9	W.	—	1.9
Mean			—	1.62
Div., Flex., etc.			+	2.23

γ¹ Eridani . . . h. m. s. 3 52 31; ° ′ ″ 103 50 42.61

				″
Jan.	11	E.	—	0.7
	23	E.	—	1.5
	27	E.	—	2.9
June	7	E.	—	3.0
	19	E.	—	2.9
	21	R.	—	2.0
	26	W.	—	2.6
Mean			—	2.23
Div., Flex., etc.			+	2.42

γ Tauri . . . . . h. m. s. 4 13 5; ° ′ ″ 74 39 30.72

				″
June	26	W.	—	2.2
July	2	S.	—	1.9
	5	E.	—	3.4
	9	E.	—	3.1
Mean			—	2.65
Div., Flex., etc.			+	2.40

ε Tauri . . . . . h. m. s. 4 21 44; ° ′ ″ 71 4 57.39

				″
Jan.	24	S.	—	3.1
	27	E.	—	2.6

ε Tauri—Continued.

				″
May	1	R.	—	1.4
June	26	W.	—	2.1
July	2	S.	—	2.6
	9	E.	—	3.7
Mean			—	2.58
Div., Flex., etc.			+	2.34

α Tauri . . . . . h. m. s. 4 29 9; ° ′ ″ 73 43 45.24

				″
Feb.	24	R.	—	1.0
	25	S.	—	1.0
April	17	E.	—	0.4
	25	E.	—	1.6
	28	W.	—	0.5
May	1	R.	—	1.6
	9	R.	+	0.4
	17	R.	—	0.2
June	20	S.	—	2.4
	21	R.	—	3.8
	23	E.	—	3.2
	26	W.	—	2.2
July	2	S.	—	2.5
	6	S.	—	2.1
	9	E.	—	3.4
Mean			—	1.70
Div., Flex., etc.			+	2.38

α Tauri (Ref.).

				″
June	21	R.	+	1.9
Div., Flex., etc.			—	0.70

α Camelopardalis . h. m. s. 4 42 19; ° ′ ″ 23 51 36.41

				″
Feb.	6	R.	—	2.4
	24	R.	—	0.6
Mean			—	1.50
Div., Flex., etc.			+	1.81

α Camelopardalis (Ref.).

				″
Feb.	24	R.		0.0
Div., Flex., etc.				0.00

ι Aurigæ . . . . . h. m. s. 4 49 19; ° ′ ″ 57 1 20.12

				″
Jan.	24	S.	—	3.1
Feb.	24	R.	—	1.5
April	17	E.	—	1.8
	25	E.	—	2.5
May	1	R.	—	1.4
	3	E.	—	1.9
June	20	S.	—	3.0
	26	W.	—	3.2
July	6	S.	—	2.5
	9	E.	—	3.8
	12	W.	—	3.3
	14	S.	—	2.3
Mean			—	2.52
Div., Flex., etc.			+	2.21

11 Orionis . . . . h. m. s. 4 57 50; ° ′ ″ 74 45 41.84

				″
Feb.	24	R.	—	2.5
Div., Flex., etc.			+	2.40

α Aurigæ . . . . . h. m. s. 5 7 58; ° ′ ″ 44 7 25.74

				″
Feb.	24	R.	—	1.5
April	25	E.	—	2.6
	28	W.	—	2.3
May	1	R.	—	2.6
	3	E.	—	1.7
	9	R.	—	1.7
	24	S.	—	3.7
	29	R.	—	1.3
June	2	R.	—	2.1
	6	R.	—	1.8
July	5	E.	—	2.5
	6	S.	—	2.8
	9	E.	—	2.9
	11	R.	—	0.8
	12	W.	—	3.2
	14	S.	—	2.6
	20	W.	—	2.7
Mean			—	2.28
Div., Flex., etc.			+	1.31

β Orionis . . . . . h. m. s. 5 8 52; ° ′ ″ 98 20 20.84

				″
Feb.	2	R.	—	1.6
April	25	E.	—	2.8
May	1	R.	—	4.3
	3	E.	—	3.4
	24	S.	—	3.6
July	2	S.	—	3.6
	5	E.	—	4.2
	6	S.	—	3.6
	9	E.	—	3.6
	11	R.	—	2.8
	12	W.	—	3.0
	20	W.	—	3.3
Mean			—	3.32
Div., Flex., etc.			+	2.40

β Orionis (Ref.).

				″
Feb.	2	R.	+	0.4
Div., Flex., etc.			—	0.60

β Tauri . . . . . h. m. s. 5 18 50; ° ′ ″ 61 29 37.56

				″
Jan.	19	R.	—	1.9
Feb.	3	W.	—	2.6
	10	R.	—	0.5
	23	W.	—	1.8
	24	R.	—	1.3
May	1	R.	—	4.5
	3	E.	—	2.8
	9	R.	—	1.0
	24	S.	—	2.7
June	20	S.	—	2.7

β Tauri—Continued.

				″
July	6	S.	—	3.9
	11	R.	—	1.9
	12	W.	—	2.7
	14	S.	—	2.7
	20	W.	—	3.2
Mean			—	2.41
Div., Flex., etc.			+	2.29

β Tauri (Ref.).

				″
Feb.	10	R.		0.0
Div., Flex., etc.			—	0.31

Groombridge 966 . h. m. s. 5 23 58; ° ′ ″ 15 2 15.20

				″
Feb	24	R.	—	1.2
Div., Flex., etc.			+	1.58

	°	′	″
Groom. 966, S. P.	344	57	44.80

				″
May	25	R.	—	1.3
June	2	R.	—	2.1
Mean			—	1.70
Div., Flex., etc.			+	1.26

δ Orionis . . . . . h. m. s. 5 25 59; ° ′ ″ 90 23 15.87

				″
May	3	E.	—	2.8
July	11	R.	—	2.7
	14	S.	—	3.7
	20	W.	—	3.4
	24	W.	—	4.2
Mean			—	3.36
Div., Flex., etc.			+	2.56

α Leporis . . . . h. m. s. 5 27 32; ° ′ ″ 107 54 28.15

				″
Jan.	24	S.	—	3.7
Feb.	23	W.	—	3.0
	25	S.	—	1.6
	26	E.	—	2.3
July	12	W.	—	3.4
Mean			—	2.80
Div., Flex., etc.			+	2.68

ε Orionis . . . . . h. m. s. 5 30 14; ° ′ ″ 91 16 42.64

				″
Feb.	3	W.	—	2.9
	23	W.	—	2.3
	26	E.	—	1.1
May	3	E.	—	2.1
	29	R.	—	2.4
June	2	R.	—	1.5
	5	E.	—	2.6
July	12	W.	—	2.7
	24	W.	—	3.2
Mean			—	2.31
Div., Flex., etc.			+	2.49

α COLUMBÆ . . . h. m. s. 5 35 23; ° ′ ″ 124 8 16.40

			″
Jan.	14	W.	— 0.2
	19	R.	— 1.1
Feb.	23	W.	— 2.3
	24	R.	— 2.8
	25	S.	— 0.7
Mean			— 1.42
Div., Flex., etc.			+ 2.28

α ORIONIS . . . . . h. m. s. 5 48 47; ° ′ ″ 82 36 58.63

			″
Jan.	14	W.	— 1.7
Feb.	15	W.	— 0.9
	17	S.	— 2.7
	26	E.	— 1.6
March	4	E.	— 2.9
May	9	R.	+ 0.6
	24	S.	— 2.5
	29	R.	— 1.5
	30	W.	— 2.5
June	2	R.	— 3.2
July	11	R.	— 1.7
	14	S.	— 2.4
	20	W.	— 3.0
	23	R.	— 1.3
	24	W.	— 3.4
	27	R.	— 2.1
Mean			— 2.05
Div., Flex., etc.			+ 2.56

ν ORIONIS . . . . . h. m. s. 6 0 50; ° ′ ″ 75 13 7.87

			″
Jan.	17	R.	— 1.3
	19	R.	— 2.2
	23	E.	— 1.9
Feb.	1	S.	— 2.0
	3	W.	— 1.8
	10	R.	— 0.8
	15	W.	— 0.4
	17	S.	— 2.4
	26	E.	— 2.0
March	2	R.	— 0.6
	4	E.	— 3.1
	25	W.	— 0.2
Mean			— 1.56
Div., Flex., etc.			+ 2.41

22 CAMELOPARDALIS h. m. s. 6 5 50; ° ′ ″ 20 38 29.08

			″
Feb.	10	R.	— 1.0
Div., Flex., etc.			+ 1.81

μ GEMINORUM . . . h. m. s. 6 15 49; ° ′ ″ 67 25 38.49

			″
Jan.	14	W.	— 0.5
	23	E.	— 1.7
	27	E.	— 1.7
Feb.	1	S.	— 1.8
	15	W.	— 0.2
	26	E.	— 2.0

μ GEMINORUM—Continued.

			″
March	4	E.	— 2.5
	25	W.	— 1.6
	29	S.	+ 1.6
May	29	R.	— 0.9
June	2	R.	— 1.3
July	23	R.	— 2.3
	24	W.	— 2.4
	27	R.	— 2.4
Aug.	6	E.	— 2.6
	10	E.	— 4.5
Mean			— 1.68
Div., Flex., etc. . . .			+ 2.32

γ GEMINORUM . . . h. m. s. 6 30 54; ° ′ ″ 73 30 4.99

			″
Jan.	17	R.	— 0.6
	19	R.	— 2.7
	23	E.	— 3.2
	27	E.	— 1.0
Feb.	1	S.	— 2.0
	10	R.	— 2.0
	15	W.	— 1.5
	26	E.	— 2.8
	27	R.	— 1.8
March	25	W.	— 1.4
	29	S.	+ 1.1
	30	R.	— 1.3
	31	W.	— 1.1
May	29	R.	— 1.6
	30	W.	— 2.1
June	2	R.	— 2.2
	8	E.	— 3.2
July	23	R.	— 1.2
	24	W.	— 2.5
	27	R.	— 1.3
Aug.	6	E.	— 3.0
	10	E.	— 3.2
Mean			— 1.85
Div., Flex., etc. . . .			+ 2.38

α CANIS MAJORIS . h. m. s. 6 39 57; ° ′ ″ 106 33 19.12

			″
Jan.	17	R.	— 0.6
	19	R.	— 0.9
Feb.	27	R.	— 0.6
March	14	R.	+ 0.4
	25	W.	— 0.9
	30	R.	— 0.7
May	30	W.	— 0.9
June	2	R.	— 2.1
	14	R.	— 1.4
July	23	R.	— 1.3
	24	W.	— 1.9
	27	R.	— 1.3
Aug.	6	E.	— 2.7
	10	E.	+ 0.7
Mean			— 1.01
Div., Flex., etc.			+ 2.61

51 CEPHEI . . . . h. m. s. 6 44 46; ° ′ ″ 2 46 22.48

			″
Jan.	14	W.	— 1.6
	17	R.	+ 0.8
	19	R.	— 2.2
	23	E.	— 2.2
	24	S.	— 3.0
	27	E.	— 1.2

51 CEPHEI—Continued.

			″
Feb.	15	W.	— 0.5
	23	W.	— 2.4
	26	E.	— 0.7
	27	R.	— 2.6
March	2	R.	— 1.6
	4	E.	— 2.6
	14	R.	— 0.2
	30	R.	— 1.1
Mean			— 1.51
Div., Flex., etc.			+ 1.37

51 CEPHEI, S. P. . . ° ′ ″ 357 13 37.52

			″
June	22	R.	— 1.2
	27	W.	+ 1.7
July	6	E.	— 1.6
	10	E.	— 0.5
	11	S.	— 0.5
	28	R.	— 2.1
Aug.	11	E.	— 0.7
	14	W.	— 0.6
	16	E.	— 2.0
	17	W.	— 1.9
Sept.	1	W.	+ 0.3
	18	W.	0.0
Oct.	6	W.	— 1.6
	7	S.	— 0.8
Mean			— 0.82
Div., Flex., etc.			+ 1.44

ε CANIS MAJORIS . h. m. s. 6 53 59; ° ′ ″ 118 48 44.90

			″
Jan.	19	R.	+ 1.9
Feb.	27	R.	— 1.1
March	13	S.	— 1.1
	14	R.	0.0
	25	W.	— 1.2
	31	W.	— 1.0
June	14	R.	— 2.9
July	24	W.	— 3.9
Aug.	15	E.	— 4.4
	20	W.	— 3.8
Mean			— 1.75
Div., Flex., etc.			+ 2.51

δ CANIS MAJORIS . h. m. s. 7 3 36; ° ′ ″ 116 12 24.11

			″
Jan.	17	R.	— 1.5
	19	R.	— 1.9
	27	E.	— 1.3
Feb.	1	S.	— 0.9
	26	E.	— 2.5
March	2	R.	— 0.6
	14	R.	— 0.3
June	14	R.	— 3.9
July	24	W.	— 2.4
	27	R.	— 2.2
Aug.	15	E.	— 2.7
	20	W.	— 2.8
	23	W.	— 1.5
	24	W.	— 3.1
Mean			— 1.97
Div., Flex., etc.			+ 2.58

δ GEMINORUM . . . h. m. s. 7 13 5; ° ′ ″ 67 48 6.40

			″
Jan.	17	R.	— 0.9
	19	R.	— 2.2
	24	S.	— 4.2
	27	E.	— 1.7
Feb.	10	R.	— 1.1
	17	S.	+ 0.3
	26	E.	— 1.6
	27	R.	— 1.2
March	2	R.	— 1.2
	14	R.	— 0.7
	26	R.	— 0.5
	28	E.	— 2.5
April	1	E.	— 2.7
June	20	E.	— 2.9
Aug.	15	E.	— 2.2
	23	W.	— 2.0
	24	W.	— 1.8
Nov.	8	W.	— 1.8
Mean			— 1.72
Div., Flex., etc.			+ 2.33

δ GEMINORUM (Ref.).

			″
Jan.	19	R.	— 0.9
Div., Flex., etc.			— 0.45

PIAZZI VII, 67 . . . h. m. s. 7 18 36; ° ′ ″ 21 17 44.15

			″
March	19	W.	— 0.8
	26	R.	— 1.6
Mean			— 1.20
Div., Flex., etc.			+ 1.78

PIAZZI VII, 67, S. P. ° ′ ″ 338 42 15.85

			″
Oct.	4	W.	— 3.7
Div., Flex., etc.			+ 1.15

α^2 GEMINORUM . . h. m. s. 7 27 4; ° ′ ″ 57 51 14.58

			″
Feb.	6	R.	— 1.6
	27	R.	— 2.2
March	2	R.	— 2.7
	11	W.	— 0.9
	19	W.	— 1.7
	26	R.	— 0.8
	28	E.	— 2.0
	30	R.	— 1.3
	31	W.	— 1.8
April	1	E.	— 2.5
May	23	E.	— 1.6
	31	E.	— 1.5
June	20	E.	— 3.2
	21	S.	— 3.1
	26	R.	— 2.2
	27	W.	— 0.9
Aug.	10	E.	— 3.6
	15	E.	— 2.3
	20	W.	— 2.6
	23	W.	— 1.2
	24	W.	— 2.1
Dec.	28	W.	— 1.6
	30	W.	— 2.2
Mean			— 1.98
Div., Flex., etc.			+ 2.23

a^3 Geminorum (Ref.).

			″
Feb.	27	R.	+ 0.2
March	2	R.	+ 0.8
Mean			+ 0.50
Div., Flex., etc.			— 0.08

α Canis Minoris . h. m. s. 7 33 7; ° ′ ″ 84 28 25.41

			″
Feb.	3	W.	— 2.1
	6	R.	— 2.5
March	11	W.	— 1.2
	19	W.	— 2.3
	26	R.	— 1.0
	28	E.	— 3.5
	30	R.	— 1.0
	31	W.	— 2.0
April	1	E.	— 2.2
May	23	E.	— 2.0
	31	E.	— 2.9
June	8	E.	— 3.3
	21	S.	— 2.9
	24	E.	— 1.3
	26	R.	— 2.7
	27	W.	— 1.2
July	23	R.	— 3.3
Aug.	10	E.	— 2.8
	15	E.	— 2.6
	20	W.	— 2.6
	23	W.	— 1.0
	24	W.	— 1.8
Nov.	8	W.	— 2.8
	15	W.	— 4.1
Dec.	28	W.	— 1.6
	30	W.	— 2.3
Mean			— 2.27
Div., Flex., etc.			+ 2.51

β Geminorum . . . h. m. s. 7 38 6; ° ′ ″ 61 41 24.35

			″
Jan.	24	S.	— 4.0
Feb.	2	R.	— 1.3
	3	W.	— 1.5
	6	R.	— 2.7
March	11	W.	— 1.0
May	23	E.	— 2.6
	31	E.	— 1.4
June	21	S.	— 2.3
	24	E.	— 1.5
	26	R.	— 2.1
	27	W.	— 1.1
July	23	R.	— 1.8
Aug.	10	E.	— 2.4
	15	E.	— 2.7
	23	W.	— 1.2
	24	W.	— 1.9
Nov.	8	W.	— 2.1
	15	W.	— 3.4
Dec.	28	W.	— 2.3
Mean			— 2.07
Div., Flex., etc.			+ 2.29

φ Geminorum . . . h. m. s. 7 46 16; ° ′ ″ 62 55 48.11

			″
Jan.	24	S.	— 3.4
Feb.	1	S.	— 1.7
	3	W.	— 2.6
	10	R.	— 0.8

φ Geminorum—Continued.

			″
Feb.	15	W.	— 1.3
	17	S.	— 2.4
Mar.	19	W.	— 2.6
	26	R.	— 2.1
	28	E.	— 2.7
Mean			— 2.18
Div., Flex., etc.			+ 2.35

3 Ursæ Majoris . h. m. s. 8 1 3; ° ′ ″ 21 10 50.34

			″
Feb.	2	R.	— 1.6
	6	R.	— 2.6
Mean			— 2.10
Div., Flex., etc.			+ 1.78

	° ′ ″
3 Ursæ Majoris, S.P.	338 49 9.66

			″
July	24	R.	— 2.0
Oct.	4	W.	— 0.7
Mean			— 1.35
Div., Flex., etc.			+ 1.15

15 Argus . . . . h. m. s. 8 2 31; ° ′ ″ 113 57 53.84

			″
Feb.	1	S.	— 1.3
	15	W.	— 1.6
	23	W.	— 1.9
	25	S.	— 2.0
	27	R.	— 0.3
March	2	R.	— 0.9
	11	W.	— 1.9
	13	S.	— 1.4
	31	W.	— 3.5
Mean			— 1.64
Div., Flex., etc.			+ 2.62

η Cancri . . . . . h. m. s. 8 25 53; ° ′ ″ 69 9 32.61

			″
Feb.	2	R.	— 2.0
	10	R.	— 3.1
	15	W.	— 2.4
	23	W.	— 2.2
March	14	R.	— 1.9
	30	R.	— 1.5
April	24	W.	— 1.9
Dec.	11	W.	— 2.3
Mean			— 2.16
Div., Flex., etc.			+ 2.33

η Cancri (Ref.).

			″
March	14	R.	+ 0.3
Div., Flex., etc.			— 0.49

ε Hydræ . . . . . h. m. s. 8 40 32; ° ′ ″ 83 8 57.18

			″
Feb.	2	R.	— 2.3
	15	W.	— 2.2

ε Hydræ—Continued.

			″
Feb.	23	W.	— 3.2
March	2	R.	— 1.8
	13	S.	— 3.2
	25	W.	— 2.8
	29	S.	— 2.1
	30	R.	— 1.7
	31	W.	— 2.1
April	17	E.	— 2.5
	24	W.	— 1.7
	25	E.	— 1.5
May	23	E.	— 2.4
Sept.	14	W.	— 4.4
Dec.	11	W.	— 3.0
Mean			— 2.46
Div., Flex., etc.			+ 2.55

ι Ursæ Majoris . . h. m. s. 8 51 7; ° ′ ″ 41 29 46.13

			″
Feb.	2	R.	— 1.5
	15	W.	— 2.1
	23	W.	— 1.6
	24	R.	— 1.6
March	23	W.	— 1.3
	25	W.	(— 4.1)
	26	R.	— 1.8
	28	E.	— 0.6
	30	R.	— 2.1
	31	W.	— 2.1
April	24	W.	— 2.0
Sept.	14	W.	— 2.2
Dec.	4	W.	— 0.4
Mean			— 1.61
Div., Flex., etc.			+ 1.46

ι Ursæ Majoris (Ref.).

			″
Feb.	2	R.	+ 0.8
	23	W.	0.0
March	23	W.	— 0.2
	25	W.	(— 2.8)
	28	E.	— 0.9
	30	R.	0.0
Mean			— 0.06
Div., Flex., etc.			+ 0.20

σ^2 Ursæ Majoris . h. m. s. 9 0 0; ° ′ ″ 22 23 16.18

			″
Feb.	17	S.	— 1.6
	24	R.	— 1.6
Mean			— 1.60
Div., Flex., etc.			+ 1.76

	° ′ ″
σ^2 Ursæ Majoris, S.P.	337 36 43.82

			″
July	28	R.	— 0.8
Div., Flex., etc.			+ 1.14

κ Cancri . . . . . h. m. s. 9 1 21; ° ′ ″ 78 51 27.88

			″
Feb.	10	R.	— 1.7
	24	R.	— 1.8
	25	S.	— 1.8

κ Cancri—Continued.

			″
March	11	W.	— 1.1
	23	W.	— 2.2
	25	W.	— 2.6
	26	R.	— 1.4
	29	S.	— 1.6
	30	R.	— 1.9
April	12	W.	— 0.7
	17	E.	— 1.9
	24	W.	— 2.7
	25	E.	+ 0.7
Nov.	2	W.	— 3.7
	20	W.	— 2.5
	22	W.	— 2.8
Dec.	4	W.	— 2.2
	7	W.	— 4.4
	11	W.	— 3.0
Mean			— 2.07
Div., Flex., etc.			+ 2.57

ι Draconis . . . . h. m. s. 9 20 10; ° ′ ″ 8 9 14.69

			″
Feb.	10	R.	— 1.7
	24	R.	— 2.0
March	26	R.	— 1.1
April	27	R.	— 3.8
Mean			— 2.15
Div., Flex., etc.			+ 1.43

ι Draconis (Ref.).

			″
March	26	R.	— 0.7
Div., Flex., etc.			+ 0.19

α Hydræ . . . . . h. m. s. 9 21 47; ° ′ ″ 98 8 52.26

			″
Feb.	2	R.	— 0.6
	10	R.	— 0.9
	17	S.	(— 4.7)
	24	R.	— 2.0
March	2	R.	— 1.6
	25	W.	— 2.2
	29	S.	— 1.1
April	12	W.	— 1.0
	17	E.	— 1.9
	24	W.	— 2.3
	25	E.	— 2.3
May	23	E.	— 1.8
July	6	E.	— 2.4
	12	R.	— 2.5
	24	R.	— 1.2
Sept.	14	W.	— 2.2
	19	W.	— 2.6
	23	W.	— 2.1
	28	W.	— 3.9
Nov.	21	W.	— 1.6
	22	W.	— 2.6
	24	W.	— 2.7
Dec.	4	W.	— 1.6
Mean			— 1.96
Div., Flex., etc.			+ 2.41

d Ursæ Majoris . . h. m. s. 9 24 1; ° ′ ″ 19 39 8.31

			″
Nov.	22	W.	— 1.3
Div., Flex., etc.			+ 1.83

			° ′ ″
d Ursæ Majoris, S. P.			340 20 51.69

			″
Oct.	3	S.	+ 0.2
Div., Flex., etc.			+ 1.16

θ Ursæ Majoris . . { h. m. s. 9 24 57; ° ′ ″ 37 47 9.02

			″
March	4	E.	— 1.4
April	27	R.	— 1.4
Sept.	19	W.	— 1.2
	28	W.	— 2.1
Nov.	21	W.	— 0.3
	24	W.	— 2.1
Mean			— 1.42
Div., Flex., etc. . . .			+ 1.51

θ Ursæ Majoris (Ref.).

			″
March	4	E.	— 0.3
Div., Flex., etc. . . .			+ 0.13

ε Leonis . . . . . { h. m. s. 9 39 9; ° ′ ″ 65 40 59.37

			″
Feb.	10	R.	— 1.6
	24	R.	— 2.7
	25	S.	— 0.7
March	13	S.	— 0.9
April	24	W.	— 0.8
July	24	R.	— 1.6
	25	W.	— 1.7
Sept.	14	W.	— 2.4
	19	W.	— 2.7
	23	W.	— 2.2
	28	W.	— 3.3
Oct.	2	S.	— 1.4
Nov.	2	W.	— 2.1
	15	W.	— 0.4
	18	W.	— 3.4
	20	W.	— 4.0
	21	W.	— 2.5
	22	W.	— 1.4
	24	W.	— 1.8
	29	W.	— 1.7
Dec.	4	W.	— 2.5
Mean			— 1.99
Div., Flex., etc. . . .			+ 2.36

ε Leonis (Ref.).

			″
Feb.	24	R.	+ 0.8
Div., Flex., etc. . . .			— 0.36

μ Leonis . . . . . { h. m. s. 9 46 3; ° ′ ″ 63 26 16.76

			″
Feb.	17	S.	— 3.3
	24	R.	— 1.8
	27	R.	— 1.3
March	23	W.	— 1.4
April	12	W.	— 0.6
	18	W.	— 1.0
Sept.	19	W.	— 3.0
	23	W.	— 2.0
Nov.	2	W.	— 2.3
	15	W.	— 1.9
	18	W.	+ 0.4
	20	W.	— 2.5
	21	W.	— 2.3
	22	W.	— 1.4
	24	W.	— 2.4

μ Leonis—Continued.

			″
Nov.	29	W.	— 2.2
Dec.	4	W.	— 2.3
Mean			— 1.84
Div., Flex., etc. . . .			+ 2.36

α Leonis . . . . . { h. m. s. 10 2 5; ° ′ ″ 77 27 23.89

			″
Feb.	27	R.	— 2.1
March	2	R.	— 3.3
	4	E.	— 3.1
	13	S.	— 1.8
	14	R.	— 1.0
April	7	R.	— 2.1
	12	W.	— 0.8
	18	W.	— 2.1
	27	R.	— 3.0
May	1	R.	— 1.2
July	6	E.	— 2.0
	10	E.	— 2.6
	15	S.	— 1.1
	24	R.	— 1.4
Sept.	14	W.	— 2.6
	18	S.	— 3.1
	19	W.	— 2.4
	23	W.	— 2.2
	28	W.	— 2.6
Oct.	2	S.	— 2.4
Nov.	18	W.	— 3.3
	20	W.	(— 5.2)
	22	W.	— 2.8
	24	W.	— 3.1
Mean			— 2.27
Div., Flex., etc. . . .			+ 2.50

α Leonis (Ref.).

			″
April	27	R.	+ 0.7
Div., Flex., etc. . . .			— 0.80

32 Ursæ Majoris . { h. m. s. 10 9 27; ° ′ ″ 24 18 13.87

			″
March	2	R.	— 1.6
	4	E.	— 2.3
	30	R.	— 1.2
April	12	W.	— 1.2
	24	W.	— 1.4
Nov.	15	W.	— 3.0
	18	W.	— 2.2
	20	W.	— 0.4
	22	W.	— 1.5
	24	W.	— 2.4
Mean			— 1.72
Div., Flex., etc. . . .			+ 1.82

32 Ursæ Majoris (Ref.).

			″
March	2	R.	— 1.1
April	12	W.	+ 1.7
	24	W.	— 2.5
Nov.	18	W.	— 0.2
	20	W.	+ 1.4
	22	W.	+ 1.5
Mean			+ 0.13
Div., Flex., etc. . . .			+ 0.02

*γ*¹ Leonis . . . . . { h. m. s. 10 13 28; ° ′ ″ 69 33 43.60

			″
March	14	R.	— 1.6

*γ*¹ Leonis—Continued.

			″
March	28	E	— 3.4
April	7	R.	— 1.7
	18	W.	— 1.7
	27	R.	— 1.3
May	1	R.	— 2.0
July	6	E.	— 2.1
	10	E.	— 1.6
	12	R.	— 2.1
	24	R.	— 1.5
	25	W.	— 1.5
Sept.	14	W.	— 2.4
	18	S.	— 2.7
	19	W.	— 2.3
	23	W.	— 1.9
	28	W.	— 2.9
Oct.	2	S.	— 1.7
Nov.	15	W.	— 2.7
	18	W.	— 2.6
	22	W.	— 1.8
Mean			— 2.08
Div., Flex., etc. . . .			+ 2.33

9 Draconis . . . . { h. m. s. 10 25 2; ° ′ ″ 13 40 47.81

			″
Feb.	10	R.	— 1.2
	27	R.	— 0.8
March	2	R.	— 1.5
	14	R.	— 0.3
	30	R.	— 0.9
April	7	R.	— 3.0
	11	R.	— 0.5
	18	W.	— 1.3
	24	W.	— 1.7
May	1	R.	— 2.1
Nov.	20	W.	— 2.0
Mean			— 1.39
Div., Flex., etc. . . .			+ 1.50

9 Draconis (Ref.).

			″
Feb.	10	R.	+ 0.2
	27	R.	+ 1.3
April	24	W.	— 0.4
Mean			+ 0.37
Div., Flex., etc. . . .			— 0.03

			° ′ ″
9 Draconis, S. P. . .			346 19 12.19

			″
Sept.	29	W.	— 0.2
Nov.	11	S.	— 0.6
	14	S.	— 1.2
	16	S.	— 0.7
	21	S.	— 1.9
	23	W.	— 2.1
	25	S.	+ 0.1
	27	S.	— 1.6
Mean			— 1.02
Div., Flex., etc. . . .			+ 1.31

ρ Leonis . . . . . { h. m. s. 10 26 36; ° ′ ″ 80 5 12.03

			″
March	2	R.	— 2.5
	3	W.	— 2.3
	4	E.	— 2.4
	28	E.	— 4.1
	29	S.	— 2.0
	30	R.	— 1.6

ρ Leonis—Continued.

			″
April	11	R.	— 1.1
	12	W.	— 1.8
	27	R.	— 1.9
May	1	R.	— 2.8
Nov.	18	W.	(— 6.4)
	22	W.	— 2.9
Mean			— 2.31
Div., Flex., etc. . . .			+ 2.59

ρ Leonis (Ref.).

			″
Nov.	22	W.	+ 1.3
Div., Flex., etc. . . .			— 0.78

l Leonis . . . . . { h. m. s. 10 43 3; ° ′ ″ 78 49 50.83

			″
Feb.	10	R.	— 1.7
	27	R.	— 1.4
March	2	R.	— 1.5
	4	E.	— 3.5
	14	R.	— 1.8
	29	S.	— 1.3
April	27	R.	— 1.1
May	3	E.	— 2.5
Mean			— 1.85
Div., Flex., etc. . . .			+ 2.57

α Ursæ Majoris . . { h. m. s. 10 56 26; ° ′ ″ 27 36 44.13

			″
March	3	W.	— 1.9
	14	R.	— 1.5
	29	S.	— 1.4
April	7	R.	— 1.5
	27	R.	— 1.6
May	1	R.	— 2.6
	3	E.	— 1.3
June	21	S.	— 2.8
Oct.	13	W.	— 2.4
Mean			— 1.89
Div., Flex., etc. . . .			+ 1.76

α Ursæ Majoris (Ref.).

			″
March	14	R.	+ 1.4
	29	S.	— 0.8
April	7	R.	0.0
	27	R.	— 0.3
May	1	R.	— 1.4
	3	E.	— 0.6
Mean			— 0.28
Div., Flex., etc. . . .			+ 0.13

δ Leonis . . . . . { h. m. s. 11 7 50; ° ′ ″ 38 49 48.12

			″
March	4	E.	— 3.5
	28	E.	— 2.6
April	18	W.	— 1.3
May	3	E.	— 1.8
	25	R.	— 3.4
June	21	S.	— 2.1
Mean			— 2.45
Div., Flex., etc. . . .			+ 1.54

δ CRATERIS . . . { h. m. s. 11 13 27 / ° ′ ″ 104 8 24.91

				″
March	4	E.	—	3.1
	28	E.	—	2.9
	30	R.	—	1.2
April	11	R.	—	2.8
	18	W.	—	2.4
	27	R.	—	2.3
May	1	R.	—	3.3
	3	E.	—	3.2
	25	R.	—	4.6
June	21	S.	—	2.4
Mean			—	2.82
Div., Flex., etc. . . .			+	2.43

τ LEONIS . . . . . { h. m. s. 11 21 52 / ° ′ ″ 86 29 38.63

				″
March	30	R.	—	1.5
April	11	R.	—	3.3
	18	W.	—	1.5
	27	R.	—	2.2
May	3	E.	—	2.1
	25	R.	—	2.7
Mean			—	2.22
Div., Flex., etc. . . .			+	2.50

λ DRACONIS . . . . { h. m. s. 11 24 23 / ° ′ ″ 20 1 4.17

				″
April	11	R.	—	2.1
	17	E.	—	1.4
	27	R.	—	1.9
May	25	R.	—	3.0
Oct.	13	W.	—	2.6
Mean			—	2.20
Div., Flex., etc. . . .			+	1.83

λ DRACONIS (Ref.).

				″
April	17	E.		0.0
Div., Flex., etc. . . .			—	0.03

υ LEONIS . . . . . { h. m. s. 11 30 54 / ° ′ ″ 90 10 20.72

				″
March	30	R.	—	1.6
April	11	R.	—	1.5
	13	R.	—	2.1
	18	W.	—	3.1
	30	S.	—	3.5
May	25	R.	—	4.7
	26	W.	—	2.5
Mean			—	2.71
Div., Flex., etc. . . .			+	2.57

υ LEONIS (Ref.).

				″
April	18	W.	+	1.3
Div., Flex., etc. . . .			—	0.64

β LEONIS . . . . . { h. m. s. 11 43 2 / ° ′ ″ 74 46 6.20

				″
March	30	R.	—	0.4

β LEONIS—Continued.

				″
April	11	R.	—	0.9
	27	R.	—	1.5
	30	S.	—	2.8
June	21	S.	—	1.5
Aug.	11	E.	—	2.5
	15	E.	—	1.1
Oct.	8	W.	—	1.2
	13	W.	—	2.3
Mean			—	1.58
Div., Flex., etc. . . .			+	2.40

β LEONIS (Ref.).

				″
March	30	R.	+	0.2
April	11	R.	—	0.1
Mean			+	0.05
Div., Flex., etc. . . .			—	0.73

γ URSÆ MAJORIS . . { h. m. s. 11 47 37 / ° ′ ″ 35 38 57.33

				″
April	30	S.	—	1.4
May	25	R.	—	2.0
Oct.	8	W.	—	1.2
	13	W.	—	2.7
Mean			—	1.82
Div., Flex., etc. . . .			+	1.54

γ URSÆ MAJORIS (Ref.).

				″
May	25	R.		0.0
Div., Flex., etc. . . .			+	0.18

σ VIRGINIS . . . . { h. m. s. 11 59 12 / ° ′ ″ 80 36 41.74

				″
April	13	R.	—	1.4
	17	E.	—	2.9
May	18	W.	—	1.8
	26	W.	—	2.4
Oct.	8	W.	—	1.7
Mean			—	2.04
Div., Flex., etc. . . .			+	2.58

4 DRACONIS . . . . { h. m. s. 12 6 40 / ° ′ ″ 11 43 40.84

				″
April	13	R.	—	2.0
May	18	W.	—	0.2
Mean			—	1.10
Div., Flex., etc. . . .			+	1.48

γ CORVI . . . . . { h. m. s. 12 9 44 / ° ′ ″ 106 53 12.05

				″
May	18	W.	—	2.1
Aug.	10	W.	—	2.8
	11	E.	—	3.3
Nov.	2	W.	—	2.7
	18	W.	—	3.6
	22	W.	—	2.2
Mean			—	2.78
Div., Flex., etc. . . .			+	2.63

η VIRGINIS . . . . { h. m. s. 12 13 52 / ° ′ ″ 90 0 39.57

				″
April	13	R.	—	2.3
	17	E.	—	3.5
	30	S.	—	4.1
May	18	W.	—	2.9
	25	R.	—	3.6
	26	W.	—	2.9
Aug.	10	W.	—	3.0
	11	E.	—	3.1
Nov.	2	W.	—	3.7
	18	W.	—	2.3
	22	W.	—	3.9
Mean			—	3.21
Div., Flex., etc. . . .			+	2.58

β CORVI . . . . . { h. m. s. 12 28 11 / ° ′ ″ 112 44 38.54

				″
April	30	S.	—	2.0
May	25	R.	—	3.0
	26	W.	—	2.3
Nov.	18	W.	—	2.5
Mean			—	2.45
Div., Flex., etc. . . .			+	2.59

κ DRACONIS . . . . { h. m. s. 12 28 26 / ° ′ ″ 19 33 40.42

				″
Nov.	2	W.	—	2.7
Div., Flex., etc. . . .			+	1.83

	°	′	″
κ DRACONIS, S. P. . .	340	26	19.58

				″
Nov.	24	S.	—	2.0
Div., Flex., etc. . . .			+	1.17

32² CAMELOPARDALIS { h. m. s. 12 48 16 / ° ′ ″ 5 56 44.47

				″
May	1	R.	—	1.9
	25	R.	—	1.9
Mean			—	1.90
Div., Flex., etc. . . .			+	1.36

	°	′	″
32² CAMELOP., S. P. .	354	3	15.53

				″
Oct.	31	W.	—	0.2
Nov.	25	W.	—	0.4
Mean			—	0.30
Div., Flex., etc. . . .			+	1.43

α² CANUM VENAT. . { h. m. s. 12 50 30 / ° ′ ″ 51 2 38.94

				″
April	7	R.	—	2.1
May	1	R.	—	1.6
	25	R.	—	1.7
June	1	S.	—	1.1
	7	W.	—	1.1
	8	E.	—	1.5
	21	S.	—	2.6
Aug.	10	W.	—	2.4
Sept.	19	S.	—	1.7
	20	W.	—	3.5

α² CANUM VENAT.—Continued.

				″
Sept.	21	S.	—	2.4
	29	W.	—	2.4
Oct.	8	W.	—	1.6
	13	W.	—	2.2
	31	W.	—	2.8
Nov.	2	W.	—	2.2
	14	W.	—	1.9
	18	W.	—	1.7
	22	W.	—	2.0
Mean			—	2.03
Div., Flex., etc. . . .			+	1.80

θ VIRGINIS . . . . { h. m. s. 13 3 50 / ° ′ ″ 94 54 31.39

				″
April	7	R.	—	2.0
	13	R.	—	0.5
	17	E.	—	3.5
May	1	R.	—	2.8
	25	R.	—	2.8
	26	W.	—	2.4
June	1	S.	—	2.5
	2	R.	—	3.5
	5	S.	—	2.8
	7	W.	—	2.5
	8	E.	—	2.7
	21	S.	—	2.3
Nov.	18	W.	—	2.3
Mean			—	2.51
Div., Flex., etc. . . .			+	2.32

α VIRGINIS . . . . { h. m. s. 13 18 59 / ° ′ ″ 100 32 42.11

				″
April	7	R.	—	1.6
June	5	S.	—	1.4
Aug.	10	W.	—	3.9
Sept.	15	W.	—	2.7
	21	S.	—	2.9
	29	W.	—	3.0
Oct.	31	W.	—	3.8
Nov.	2	W.	—	3.0
	5	S.	—	3.9
	14	W.	—	2.1
	18	W.	—	2.0
	20	W.	—	2.4
	22	W.	—	1.6
Mean			—	2.64
Div., Flex, etc. . . .			+	2.40

ζ VIRGINIS . . . . { h. m. s. 13 28 41 / ° ′ ″ 89 59 31.73

				″
April	13	R.	—	2.0
May	1	R.	—	3.4
	18	W.	—	1.8
	23	E.	—	2.4
June	1	S.	—	1.9
Aug.	10	W.	—	3.3
Sept.	15	W.	—	1.9
Nov.	14	W.	—	3.3
	23	W.	—	1.5
Mean			—	2.39
Div., Flex., etc. . . .			+	2.58

η Ursæ Majoris . h. m. s. 13 42 53; ° ′ ″ 40 5 50.87

				″
April	13	R.	—	1.7
May	23	E.	—	2.1
	26	W.	—	3.3
	29	R.	—	2.3
June	7	W.	—	2.1
	13	S.	—	1.8
Nov.	14	W.	—	1.3
	23	W.	—	0.9
Mean			—	1.94
Div., Flex., etc. . . .			+	1.53

η Ursæ Majoris (Ref.).

				″
April	13	R.	—	0.3
May	26	W.	—	1.2
	29	R.	—	1.0
Mean			—	0.83
Div., Flex., etc. . . .			+	0.17

η Bootis . . . . . h. m. s. 13 49 4; ° ′ ″ 71 0 36.94

				″
May	1	R.	—	3.2
	2	W.	—	1.0
	18	W.	—	2.0
	23	E.	—	3.2
	29	R.	—	1.5
June	1	S.	—	1.6
	7	W.	—	2.2
	13	S.	—	2.1
	21	S.	—	1.2
Sept.	15	W.	—	1.1
	20	W.	—	1.0
Oct.	3	S.	—	1.0
	14	W.	—	0.6
Nov.	5	S.	—	0.8
	14	W.	—	1.6
	23	W.	—	1.4
	26	W.	—	3.0
Dec.	5	W.	—	2.4
Mean			—	1.72
Div., Flex., etc. . . .			+	2.34

α Draconis . . . . h. m. s. 14 1 12; ° ′ ″ 25 3 35.86

				″
May	2	W.	—	0.9
	23	E.	—	2.5
	29	R.	—	2.8
June	7	W.	—	1.9
Aug.	21	W.	—	1.8
Oct.	9	W.	—	1.3
	14	W.	—	2.3
Nov.	2	W.	—	2.5
	14	W.	—	2.3
	23	W.	—	2.3
Mean			—	2.06
Div., Flex., etc. . . .			+	1.83

α Bootis . . . . . h. m. s. 14 10 17; ° ′ ″ 70 12 9.77

				″
April	13	R.	—	1.4
May	2	W.	—	2.1
	3	E.	—	2.4

α Bootis—Continued.

				″
May	23	E.	—	1.7
June	2	R.	—	2.4
	6	R.	—	0.1
	7	W.	—	2.8
Aug.	21	W.	—	1.7
Sept.	15	W.	—	1.2
	29	W.	—	0.9
Oct.	3	S.	—	0.7
	9	W.	—	2.2
	14	W.	—	2.0
Nov.	5	S.	—	1.3
	14	W.	—	1.8
	20	W.	—	1.2
	23	W.	—	2.1
	26	W.	—	3.1
Dec.	5	W.	—	1.6
Mean			—	1.72
Div., Flex., etc. . . .			+	2.33

α Bootis (Ref.).

				″
May	3	E.	+	1.1
Div., Flex., etc. . . .			—	0.52

ϑ Bootis . . . . . h. m. s. 14 21 11; ° ′ ″ 37 36 12.35

				″
June	21	S.	—	1.7
	23	W.	—	0.4
Nov.	26	W.	—	0.7
Mean			—	0.93
Div., Flex., etc. . . .			+	1.50

ϑ Bootis (Ref.).

				″
June	21	S.	—	0.3
Div., Flex., etc. . . .			+	0.13

ρ Bootis . . . . . h. m. s. 14 26 45; ° ′ ″ 59 6 36.27

				″
April	13	R.	—	1.0
May	3	E.	—	3.2
	29	R.	—	2.9
June	2	R.	—	2.2
	6	R.	—	1.3
	23	W.	—	2.2
Aug.	21	W.	—	1.5
Sept.	15	W.	—	0.8
	29	W.	—	1.9
Oct.	9	W.	—	1.2
Nov.	14	W.	—	2.1
	26	W.	+	0.5
Mean			—	1.65
Div., Flex., etc. . . .			+	2.26

5 Ursæ Minoris . h. m. s. 14 27 47; ° ′ ″ 13 46 46.06

				″
April	13	R.	—	1.2
Div., Flex., etc. . . .			+	1.50

° ′ ″
5 Ursæ Minoris, S.P. 346 13 13.94

				″
Nov.	15	W.	—	2.7
Div., Flex., etc. . . .			+	1.31

ε Bootis . . . . . h. m. s. 14 39 50; ° ′ ″ 62 25 39.75

				″
Feb.	10	R.	—	2.7
May	2	W.	—	2.0
	3	E.	—	2.8
	18	W.	—	2.6
	25	R.	—	2.0
	26	W.	—	2.1
	29	R.	—	1.9
June	2	R.	—	2.1
	6	R.	—	2.0
	19	W.	—	2.3
	23	W.	—	2.1
Aug.	21	W.	—	2.7
Sept.	21	S.	—	1.9
	29	W.	—	2.3
Oct.	9	W.	—	1.4
Dec.	3	W.	—	3.2
Mean			—	2.26
Div., Flex., etc. . . .			+	2.32

ε Bootis (Ref.).

				″
Feb.	10	R.	—	0.5
May	18	W.	+	1.0
	25	R.	+	0.4
June	2	R.	—	0.5
Mean			+	0.10
Div., Flex., etc. . . .			—	0.36

α² Libræ . . . . h. m. s. 14 44 21; ° ′ ″ 105 33 2.09

				″
Feb.	10	R.	—	2.7
May	3	E.	—	2.4
	26	W.	—	3.7
	29	R.	—	2.0
June	6	R.	—	2.3
	19	W.	—	1.2
	23	W.	—	2.9
Aug.	21	W.	—	1.9
Sept.	29	W.	—	2.3
Nov.	29	W.	—	3.2
Mean			—	2.46
Div., Flex., etc. . . .			+	2.53

β Ursæ Minoris . h. m. s. 14 51 4; ° ′ ″ 15 21 44.20

				″
Feb.	10	R.	—	1.4
May	3	E.	—	2.3
June	19	W.	—	2.3
	22	R.	(+	2.1)
	23	W.	—	1.9
	27	W.	—	1.3
Oct.	9	W.	—	1.1
Nov.	8	W.	—	2.3
	29	W.	—	2.1
Dec.	3	W.	—	1.3
	5	W.	—	2.2
Mean			—	1.82
Div., Flex., etc. . . .			+	1.61

β Ursæ Minoris (Ref.).

				″
June	23	W.	—	0.2
Div., Flex., etc. . . .			+	0.03

° ′ ″
β Ursæ Minoris, S.P. 344 38 15.80

				″
Jan.	19	R.	—	1.2
March	30	R.	—	1.3
May	28	R.	—	1.1
	29	W.	—	0.5
June	1	R.	—	0.6
	5	R.	—	2.8
	14	W.	(+	2.7)
July	9	W.	—	1.0
Mean			—	1.21
Div., Flex., etc. . . .			+	1.25

β Bootis . . . . . h. m. s. 14 57 30; ° ′ ″ 49 8 36.44

				″
Feb.	10	R.	—	3.1
June	8	E.	—	1.7
	13	S.	—	2.2
	19	W.	—	1.3
	22	R.	—	1.9
	27	W.	—	1.2
July	5	W.	—	1.3
Aug.	21	W.	—	1.5
Oct.	3	S.	—	1.3
	9	W.	—	0.9
Nov.	29	W.	—	1.6
Dec.	3	W.	—	1.6
Mean			—	1.63
Div., Flex., etc. . . .			+	1.58

β Libræ . . . . . h. m. s. 15 10 39; ° ′ ″ 98 56 47.83

				″
Feb.	10	R.	—	2.4
May	3	E.	—	2.3
June	5	S.	—	3.4
	13	S.	—	2.9
	21	S.	—	2.9
	22	R.	—	2.7
	27	W.	—	2.2
July	5	W.	—	3.1
Oct.	3	S.	—	1.5
	14	W.	—	0.9
Dec.	11	W.	—	2.5
Mean			—	2.44
Div., Flex., etc. . . .			+	2.39

μ¹ Bootis . . . . . h. m. s. 15 20 2; ° ′ ″ 52 12 29.93

				″
Feb.	10	R.	—	1.3
May	3	E.	—	1.8
June	2	R.	—	1.4
	5	S.	—	2.6
	22	R.	—	1.5
	27	W.	—	1.0
July	5	W.	—	2.7
	10	E.	—	1.8
	24	R.	—	2.5
Mean			—	1.84
Div., Flex., etc. . . .			+	1.98

γ² Ursæ Minoris . h. m. s. 15 20 55; ° ′ ″ 17 44 46.05

			″
Dec.	3	W.	— 1.4
	11	W.	— 2.6
	15	W.	— 0.4
Mean			— 1.47
Div., Flex., etc.			+ 1.79

γ² Ursæ Minoris, S.P. 342 15 13.95 (° ′ ″)

			″
Jan.	23	E.	+ 0.1
June	5	R.	— 0.8
Mean			— 0.35
Div., Flex., etc.			+ 1.19

α Coronæ Borealis h. m. s. 15 29 42; ° ′ ″ 62 53 14.82

			″
May	2	W.	— 2.1
	26	W.	— 1.9
June	5	S.	— 2.9
	19	W.	— 1.3
	22	R.	— 2.2
	27	W.	— 2.0
	29	S.	— 1.8
July	5	W.	— 1.9
	6	E.	— 3.3
	10	E.	— 1.2
	24	R.	— 2.9
Oct.	3	S.	— 1.6
	14	W.	— 1.5
Nov.	29	W.	— 1.1
Dec.	3	W.	— 2.1
	11	W.	— 2.7
Mean			— 2.03
Div., Flex., etc.			+ 2.35

α Coronæ Borealis (Ref.).

			″
May	2	W.	— 0.6
June	19	W.	+ 2.5
	22	R.	— 0.3
July	5	W.	+ 0.9
Mean			+ 0.62
Div., Flex., etc.			— 0.37

α Serpentis h. m. s. 15 38 27; ° ′ ″ 83 12 8.26

			″
Feb.	10	R.	— 2.0
May	2	W.	— 3.2
	23	E.	— 3.7
	26	W.	— 2.7
July	6	E.	— 3.9
	10	E.	— 3.1
	15	S.	— 4.1
	24	R.	— 4.6
Dec.	3	W.	— 5.1
	11	W.	— 2.9
	15	W.	— 2.4
Mean			— 3.43
Div., Flex., etc.			+ 2.54

ε Serpentis h. m. s. 15 44 56; ° ′ ″ 85 9 58.01

			″
Feb.	10	R.	— 2.1
May	23	E.	— 3.7
June	29	S.	— 2.7
July	6	E.	— 2.9
	10	E.	— 2.4
	15	S.	— 3.9
	24	R.	— 3.6
Dec.	15	W.	— 3.1
Mean			— 3.05
Div., Flex., etc			+ 2.50

ζ Ursæ Minoris h. m. s. 15 48 18; ° ′ ″ 11 50 35.47

			″
Feb.	10	R.	— 2.3
May	2	W.	+ 0.6
	29	R.	— 1.0
July	6	E.	— 2.6
	10	E.	— 1.6
	24	R.	— 2.8
Mean			— 1.62
Div., Flex., etc.			+ 1.48

ζ Ursæ Minoris (Ref.).

			″
May	2	W.	+ 2.1
Div., Flex., etc.			— 0.03

ζ Ursæ Min., S. P. . 348 9 24.53 (° ′ ″)

			″
Feb.	2	R.	— 0.9
Div., Flex., etc			+ 1.41

ε Coronæ Borealis h. m. s. 15 52 42; ° ′ ″ 62 46 46.78

			″
May	23	E.	— 2.1
	29	R.	— 1.8
June	2	R.	— 2.0
	6	R.	— 1.0
	13	S.	— 2.0
July	6	E.	— 3.2
	10	E.	— 1.9
Dec.	15	W.	— 2.6
Mean			— 2.08
Div., Flex., etc.			+ 2.34

ε Coronæ Borealis (Ref.).

			″
June	13	S.	+ 0.8
Div., Flex., etc.			— 0.37

δ Scorpii h. m. s. 15 53 21; ° ° ″ 112 17 4.68

			″
Feb.	10	R.	— 2.6
June	23	W.	— 2.3
July	15	S.	— 3.1
Aug.	4	E.	— 2.2
Mean			— 2.55
Div., Flex., etc.			+ 2.59

β¹ Scorpii h. m. s. 15 58 35; ° ′ ″ 109 28 52.67

			″
May	29	R.	— 3.4
June	2	R.	— 2.1
	6	R.	— 1.8
	22	R.	— 2.4
	24	R.	— 3.9
Aug.	4	E.	— 2.0
Mean			— 2.60
Div., Flex., etc.			+ 2.68

Groombridge 2320 h. m. s. 16 6 0; ° ′ ″ 21 52 43.87

			″
Feb.	10	R.	— 0.9
Div., Flex., etc			+ 1.76

Groombridge 2320 (Ref.).

			″
Feb.	10	R.	+ 0.7
Div., Flex., etc.			— 0.05

δ Ophiuchi h. m. s. 16 8 10; ° ′ ″ 93 23 21.90

			″
May	23	E.	— 2.2
June	13	S.	— 2.2
	21	S.	— 2.4
July	1	W.	— 2.2
Aug.	4	E.	— 1.5
Oct.	31	W.	— 2.3
Mean			— 2.13
Div., Flex., etc.			+ 2.35

τ Herculis h. m. s. 16 16 12; ° ′ ″ 43 24 18.54

			″
July	1	W.	— 1.6
Aug.	4	E.	— 2.3
Oct.	31	W.	— 0.7
Mean			— 1.53
Div., Flex., etc			+ 1.33

α Scorpii h. m. s. 16 22.10; ° ′ ″ 116 10 7.67

			″
July	1	W.	— 3.5
	25	W.	— 3.0
Mean			— 3.25
Div., Flex., etc.			+ 2.58

β Herculis h. m. s. 16 25 9; ° ′ ″ 68 15 8.45

			″
June	22	R.	— 2.2
July	1	W.	— 2.6
	25	W.	— 2.6
Oct.	31	W.	— 2.0
Dec.	11	W.	— 2.3
Mean			— 2.34
Div., Flex., etc.			+ 2.33

A Draconis h. m. s. 16 28 13; ° ′ ″ 20 58 36.29

			″
July	24	R.	— 2.9
Aug.	4	E.	— 3.2
Mean			— 3.05
Div., Flex., etc.			+ 1.79

A Draconis, S. P. . 339 1 23.71 (° ′ ″)

			″
Feb.	6	R.	— 0.8
Div., Flex., etc.			+ 1.15

ζ Ophiuchi h. m. s. 16 30 40; ° ′ ″ 100 19 36.87

			″
July	25	W.	— 3.1
Oct.	31	W.	— 1.5
Mean			— 2.30
Div., Flex., etc.			+ 2.39

η Herculis h. m. s. 16 38 51; ° ′ ″ 50 51 9.47

			″
May	2	W.	— 0.6
July	11	S.	— 1.9
	25	W.	— 2.3
Aug.	4	E.	— 2.3
Oct.	31	W.	— 0.6
Nov.	3	W.	— 0.9
	15	W.	— 0.9
Mean			— 1.36
Div., Flex., etc.			+ 1.77

κ Ophiuchi h. m. s. 16 52 5; ° ′ ″ 80 26 25.68

			″
May	25	R.	+ 0.8
	29	R.	— 2.3
June	13	S.	— 3.3
Nov.	3	W.	— 1.1
Mean			— 1.48
Div., Flex., etc.			+ 2.59

κ Ophiuchi (Ref.).

			″
May	29	R.	+ 0.9
Div., Flex., etc.			— 0.79

d Herculis h. m. s. 16 57 15; ° ′ ″ 56 15 36.27

			″
May	25	R.	— 1.3
	29	R.	— 2.0
June	13	S.	— 2.4
Aug.	10	W.	— 2.0
Mean			— 1.92
Div., Flex., etc.			+ 2.19

ε Ursæ Minoris

h. m. s.	° ′ ″
16 58 6	7 46 14.76

			″
May	25	R.	— 1.6
Div., Flex., etc.			+ 1.43

	° ′ ″
ε Ursæ Min., S. P.	352 13 45.24

			″
Feb.	24	R.	— 0.4
Div., Flex., etc.			+ 1.47

α¹ Herculis

h. m. s.	° ′ ″
17 9 16	75 28 26.97

			″
May	25	R.	— 2.3
June	13	S.	— 2.4
	19	W.	— 2.3
Aug.	4	E.	— 3.1
Nov.	15	W.	— 2.8
Mean			— 2.58
Div., Flex., etc.			+ 2.42

δ Ophiuchi

h. m. s.	° ′ ″
17 19 10	114 3 54.97

			″
June	2	R.	— 2.6
	13	S.	— 3.2
	19	W.	— 1.8
July	11	S.	— 3.4
	15	S.	— 2.7
Aug.	4	E.	— 3.2
	11	E.	— 1.9
Mean			— 2.69
Div., Flex., etc.			+ 2.62

β Draconis

h. m. s.	° ′ ″
17 27 46	37 36 39.16

			″
Jan.	22	E.	— 2.9
Nov.	3	W.	— 0.8
Mean			— 1.85
Div., Flex., etc.			+ 1.50

α Ophiuchi

h. m. s.	° ′ ″
17 29 27	77 21 10.97

			″
Jan.	22	E.	— 1.8
June	2	R.	— 2.4
Aug.	4	E.	— 3.6
	10	W.	— 2.8
	11	E.	— 2.8
Sept.	19	S.	— 1.9
Nov.	15	W.	— 2.3
Mean			— 2.51
Div., Flex., etc.			+ 2.50

μ¹ Herculis

h. m. s.	° ′ ″
17 41 50	62 12 34.34

			″
Jan.	22	E.	— 2.7
	26	E.	— 0.6

μ¹ Herculis—Continued.

			″
June	2	R.	— 2.2
	29	S.	— 2.3
July	28	R.	— 3.6
Aug.	4	E.	— 3.2
	11	E.	— 2.9
	25	W.	— 2.5
Nov.	3	W.	— 2.1
	15	W.	— 2.1
Mean			— 2.42
Div., Flex., etc.			+ 2.31

ψ¹ Draconis, S. P.

h. m. s.	° ′ ″
17 44 2	342 12 22.61

			″
Feb.	26	E.	— 0.6
Div., Flex., etc.			+ 1.19

γ Draconis

h. m. s.	° ′ ″
17 53 52	38 29 48.57

			″
Jan.	22	E.	— 0.2
	29	W.	— 2.2
June	2	R.	— 3.0
	6	R.	— 3.1
July	28	R.	— 2.2
Aug.	4	E.	— 3.3
	16	W.	— 0.9
Mean			— 2.13
Div., Flex., etc.			+ 1.53

γ Draconis (Ref.).

			″
June	2	R.	+ 0.4
	6	R.	+ 0.8
July	28	R.	— 0.6
Mean			+ 0.20
Div., Flex., etc.			+ 0.14

γ² Sagittarii

h. m. s.	° ′ ″
17 58 14	120 25 26.29

			″
June	6	R.	— 2.5
	29	S.	— 2.6
July	1	W.	— 3.8
	11	S.	— 2.5
Aug.	10	W.	— 2.1
	25	W.	— 2.7
	28	W.	— 2.0
Sept.	5	W.	— 2.0
	19	S.	— 2.1
Mean			— 2.48
Div., Flex., etc.			+ 2.45

μ Sagittarii

h. m. s.	° ′ ″
18 6 42	111 5 17.71

			″
June	29	S.	— 1.8
July	1	W.	— 2.7
	5	W.	— 3.7
	28	R.	— 2.8

μ Sagittarii—Continued.

			″
Aug.	17	W.	— 4.3
	20	W.	— 3.4
	29	W.	— 3.3
Sept.	5	W.	— 2.8
Mean			— 3.10
Div., Flex., etc.			+ 2.62

δ Ursæ Minoris

h. m. s.	° ′ ″
18 10 23	3 23 25.01

			″
Jan.	26	E.	— 0.3
June	2	R.	— 1.7
	6	R.	— 1.5
	22	R.	— 1.8
	29	S.	— 0.6
July	1	W.	— 1.3
	5	W.	— 1.3
Aug.	10	W.	— 0.9
Nov.	9	W.	— 1.5
	15	W.	— 1.2
Mean			— 1.21
Div., Flex., etc.			+ 1.33

	° ′ ″
δ Ursæ Min., S. P.	356 36 34.99

			″
Jan.	14	W.	+ 0.6
	17	R.	+ 1.0
	19	R.	— 2.0
	23	E.	— 1.7
	27	E.	— 0.1
Feb.	1	S.	— 1.2
	3	W.	— 0.9
	10	R.	— 0.3
	15	W.	+ 0.5
	23	W.	— 0.9
March	2	R.	— 1.7
	14	R.	+ 0.3
	25	W.	+ 0.1
Mean			— 0.48
Div., Flex., etc.			+ 1.43

η Serpentis

h. m. s.	° ′ ″
18 15 12	92 55 41.04

			″
Jan.	26	E.	+ 0.3
June	27	W.	— 0.2
July	5	W.	— 2.0
	28	R.	— 1.8
Aug.	14	W.	— 2.1
	17	W.	— 3.4
	20	W.	— 2.6
Sept.	1	W.	— 2.1
	5	W.	— 1.8
Nov.	3	W.	— 0.9
	15	W.	— 2.1
	27	W.	— 0.4
Mean			— 1.59
Div., Flex., etc.			+ 2.38

1 Aquilæ

h. m. s.	° ′ ″
18 28 47	98 19 31.44

			″
June	6	R.	— 2.7
	27	W.	— 0.4
	29	S.	— 2.7
July	1	W.	— 3.0
	5	W.	— 3.0

1 Aquilæ—Continued.

			″
Aug.	10	W.	— 2.5
	14	W.	— 2.0
	17	W.	— 3.0
	20	W.	— 4.0
	28	W.	— 3.2
	29	W.	— 3.7
Sept.	1	W.	— 2.8
	18	W.	— 2.2
Oct.	7	S.	— 1.4
Nov.	3	W.	— 1.7
	9	W.	— 2.2
	15	W.	— 1.6
	27	W.	— 2.5
Mean			— 2.48
Div., Flex., etc.			+ 2.40

α Lyræ

h. m. s.	° ′ ″
18 32 57	51 19 31.89

			″
Jan.	26	E.	+ 1.4
	29	W.	— 3.1
Feb.	1	R.	— 1.6
	6	W.	— 2.0
	9	R.	— 2.0
	10	W.	— 2.2
	14	W.	— 2.5
June	16	W.	— 1.5
	22	R.	— 2.9
	27	W.	— 0.9
July	1	W.	— 2.8
Aug.	14	W.	— 2.5
	17	W.	— 2.8
	20	W.	— 3.8
Oct.	7	S.	— 1.3
Nov.	3	W.	— 2.6
	9	W.	— 2.0
	15	W.	— 1.7
	27	W.	— 1.3
Mean			— 2.01
Div., Flex., etc.			+ 1.85

β Lyræ

h. m. s.	° ′ ″
18 45 43	56 46 25.17

			″
Jan.	26	E.	0.0
Feb.	5	R.	— 1.5
	9	R.	— 0.9
	10	W.	— 2.1
	14	W.	— 2.8
Aug.	28	W.	— 2.3
	29	W.	— 2.3
Sept.	1	W.	— 2.7
	5	W.	— 2.1
	18	W.	— 2.0
Oct.	6	W.	— 2.5
Nov.	9	W.	— 1.4
	15	W.	— 1.1
Mean			— 1.82
Div., Flex., etc.			+ 2.21

σ Sagittarii

h. m. s.	° ′ ″
18 47 57	116 26 30.55

			″
Feb.	9	R.	— 2.4
	14	W.	— 4.1
June	16	W.	— 1.6
July	15	S.	— 2.1
Aug.	17	W.	— 4.1
	20	W.	— 3.5
Mean			— 2.97
Div., Flex., etc.			+ 2.57

ζ Aquilæ . . . . . h. m. s. 18 59 59 / ° ′ ″ 76 18 39.49

				″
Jan.	31	S.	—	1.2
Feb.	1	R.	—	1.6
	5	R.	—	1.8
	9	R.	—	2.4
	10	W.	—	1.2
	14	W.	—	2.5
	16	S.	—	0.7
June	22	R.	—	1.9
July	10	E.	—	1.8
	15	S.	—	2.8
Aug.	11	E.	—	2.9
	16	E.	—	2.1
Sept.	18	W.	—	1.8
Oct.	3	S.	—	2.2
	5	E.	—	3.5
Dec.	7	W.	—	2.9
Mean			—	2.08
Div., Flex., etc.			+	2.45

d Sagittarii . . . h. m. s. 19 10 44 / ° ′ ″ 109 9 41.70

				″
June	22	R.	—	1.6
July	5	W.	—	2.8
	6	E.	—	2.1
	10	E.	—	2.3
	11	S.	—	3.1
	25	W.	—	2.7
Aug.	11	E.	—	3.5
	16	E.	—	3.0
	28	W.	—	4.2
	29	W.	—	3.8
Sept.	15	W.	—	3.6
	29	W.	—	4.1
Oct.	3	S.	—	2.3
	4	W.	—	2.3
	5	E.	—	4.2
	6	W.	—	2.4
	7	S.	—	1.9
	14	W.	—	3.1
Mean			—	2.94
Div., Flex., etc.			+	2.68

δ Draconis . . . . h. m. s. 19 12 31 / ° ′ ″ 22 32 45.67

				″
Jan.	31	S.	—	1.5
Feb.	1	R.	—	2.5
	5	R.	—	3.0
	6	W.	—	1.3
	9	R.	—	2.2
	10	W.	—	1.3
	14	W.	—	2.6
	16	S.	—	2.3
Dec.	6	W.	—	1.4
	7	W.	—	0.9
Mean			—	1.90
Div., Flex., etc.			+	1.77

δ Draconis, S. P. . . ° ′ ″ 337 27 14.33

				″
June	26	R.	—	0.5
Div., Flex., etc.			+	1.14

τ Draconis . . . . h. m. s. 19 17 49 / ° ′ ″ 16 51 50.39

				″
Oct.	6	W.	—	1.1
Div., Flex., etc.			+	1.75

δ Aquilæ . . . . . h. m. s. 19 19 33 / ° ′ ″ 87 7 10.02

				″
Jan.	31	S.	—	1.7
Feb.	5	R.	—	3.0
	9	R.	—	3.2
	10	W.	—	2.4
	16	S.	—	2.1
June	16	W.	—	1.2
July	5	W.	—	2.6
	6	E.	—	2.7
	10	E.	—	2.4
	11	S.	—	4.1
	24	R.	—	2.1
Aug.	11	E.	—	0.2
	16	E.	—	2.8
Sept.	15	W.	—	3.6
	29	W.	—	3.7
Oct.	4	W.	—	3.0
	7	S.	—	1.8
	14	W.	—	2.2
Dec.	7	W.	—	2.9
Mean			—	2.51
Div., Flex., etc.			+	2.50

κ Aquilæ . . . . h. m. s. 19 30 33 / ° ′ ″ 97 17 19.15

				″
July	6	E.	—	1.4
	10	E.	—	2.3
	11	S.	—	3.2
	24	R.	—	2.5
	25	W.	—	1.5
Aug.	16	E.	—	2.6
Mean			—	2.25
Div., Flex., etc.			+	2.41

γ Aquilæ . . . . h. m. s. 19 40 39 / ° ′ ″ 79 40 24.16

				″
Jan.	31	S.	—	1.2
Feb.	1	R.	—	0.9
	5	R.	—	2.0
	9	R.	—	2.4
	10	W.	—	0.2
	17	W.	—	1.1
July	6	E.	—	2.3
Aug.	16	E.	—	4.3
Dec.	7	W.	—	2.3
Mean			—	1.86
Div., Flex., etc.			+	2.59

λ Ursæ Minoris . h. m. s. 19 42 6 / ° ′ ″ 1 3 5.96

				″
July	6	E.	—	1.0
	10	E.	—	2.3
	24	R.	—	0.4
	25	W.	—	1.0
	28	R.	—	1.6

λ Ursæ Minoris—Continued.

				″
Aug.	28	W.	—	1.7
	29	W.	—	1.4
Sept.	19	S.	—	1.3
Oct.	3	S.	—	1.3
	4	W.	—	1.5
Mean			—	1.35
Div., Flex., etc.			+	1.48

λ Ursæ Minoris, S. P., ° ′ ″ 358 56 54.04

				″
Feb.	2	R.	—	0.7
	6	R.	—	2.3
	17	S.	—	0.8
	24	R.	—	1.7
	25	S.	—	0.1
	27	R.	—	1.1
March	4	E.	—	1.2
	11	W.	—	0.1
	26	R.	—	2.3
	28	E.	—	2.4
	29	S.	—	0.4
	30	R.	—	0.5
April	1	E.	(—	4.0)
Nov.	8	W.	—	1.9
	15	W.	—	0.6
Dec.	28	W.	—	1.2
	30	W.	—	0.8
Mean			—	1.13
Div., Flex., etc.			+	1.53

α Aquilæ . . . . h. m. s. 19 45 2 / ° ′ ″ 81 26 32.65

				″
Jan.	31	S.	—	0.7
Feb.	1	R.	—	1.2
	6	W.	—	0.9
	9	R.	—	2.3
	10	W.	—	1.3
	14	W.	—	3.1
	16	S.	—	0.9
	17	W.	—	1.3
	26	W.	—	2.5
June	16	W.	—	1.4
July	11	S.	—	3.2
Nov.	15	W.	—	1.8
Mean			—	1.72
Div., Flex., etc.			+	2.58

ε Draconis . . . . h. m. s. 19 48 34 / ° ′ ″ 20 1 57.39

				″
Feb.	9	R.	—	2.1
	17	W.	—	1.2
July	25	W.	—	1.6
Dec.	7	W.	—	0.6
Mean			—	1.38
Div., Flex., etc.			+	1.83

ε Draconis (Ref.).

				″
July	25	W.	—	0.9
Div., Flex., etc.			—	0.03

β Aquilæ . . . . h. m. s. 19 49 31 / ° ′ ″ 83 53 13.52

β Aquilæ—Continued.

				″
Feb.	26	W.	—	2.6
July	11	S.	—	3.7
	24	R.	—	1.3
Aug.	16	E.	—	2.4
Sept.	19	S.	—	3.0
Nov.	15	W.	—	1.5
Mean			—	2.42
Div., Flex., etc.			+	2.52

τ Aquilæ . . . . h. m. s. 19 58 23 / ° ′ ″ 83 3 15.14

				″
July	24	R.	—	2.2
	25	W.	—	3.7
Aug.	16	E.	—	2.7
Sept.	19	S.	—	2.0
Mean			—	2.65
Div., Flex., etc.			+	2.55

a^2 Capricorni . . h. m. s. 20 11 30 / ° ′ ″ 102 54 34.33

				″
Mar.	1	R.	—	2.2
Sept.	15	W.	—	3.2
	19	S.	—	1.7
	29	W.	—	3.2
Oct.	3	S.	—	2.9
	4	W.	—	3.7
	5	E.	—	3.7
	6	W.	—	3.3
	14	W.	—	2.0
Nov.	15	W.	—	2.2
	24	W.	—	1.3
Mean			—	2.67
Div., Flex., etc.			+	2.42

κ Cephei . . . . . h. m. s. 20 12 50 / ° ′ ″ 12 38 40.43

				″
July	24	R.	—	1.6
Sept.	29	W.	—	0.9
Mean			—	1.25
Div., Flex., etc.			+	1.49

κ Cephei (Ref.).

				″
July	24	R.	+	0.2
Div., Flex., etc.			—	0.05

κ Cephei, S. P., ° ′ ″ 347 21 19.57

				″
Feb.	17	S.	—	0.1
March	31	W.	—	1.2
Dec.	7	W.	+	0.3
Mean			—	0.33
Div., Flex., etc.			+	1.36

γ Cygni . . . . . h. m. s. 20 18 0 / ° ′ ″ 50 7 13.79

				″
Feb.	24	S.	—	0.8
	26	W.	—	0.8

γ Cygni—Continued.

			″
March	1	R.	— 2.8
	2	W.	+ 0.3
Nov.	24	W.	— 0.4
Dec.	6	W.	— 1.8
Mean			— 1.05
Div., Flex., etc.			+ 1.67

π Capricorni — h. m. s. 20 20 34; ° ′ ″ 108 35 51.08

			″
Aug.	8	W.	— 2.9
Oct.	5	E.	— 3.2
	6	W.	— 3.2
Mean			— 3.10
Div., Flex., etc.			+ 2.68

ε Delphini — h. m. s. 20 27 35; ° ′ ″ 79 5 48.80

			″
July	28	R.	— 2.7
Sept.	29	W.	— 3.7
Oct.	4	W.	— 3.4
	5	E.	— 2.6
	6	W.	— 3.1
Nov.	24	W.	— 1.6
Mean			— 2.85
Div., Flex., etc.			+ 2.58

Groombridge 3241 — h. m. s. 20 30 30; ° ′ ″ 17 52 5.43

			″
Aug.	8	W.	— 1.9
Sept.	29	W.	— 1.4
Mean			— 1.65
Div., Flex., etc.			+ 1.80

Groom. 3241, S. P., 342 ° 7 ′ 54.57 ″

			″
Dec.	11	W.	— 3.2
Div., Flex., etc.			+ 1.19

α Cygni — h. m. s. 20 37 25; ° ′ ″ 45 8 27.14

			″
Feb.	17	W.	+ 0.3
	24	S.	— 1.5
	26	W.	— 0.9
March	1	R.	— 1.9
	2	W.	+ 0.2
	9	R.	— 1.0
Aug.	8	W.	— 1.8
Sept.	15	W.	— 2.0
	29	W.	— 2.3
Oct.	4	W.	— 2.3
	5	E.	— 1.4
	6	W.	— 2.5
	7	S.	— 3.3
Nov.	24	W.	— 0.3
Mean			— 1.48
Div., Flex., etc.			+ 1.31

α Cygni (Ref.).

			″
Sept.	15	W.	— 0.5
	29	W.	— 1.7
Oct.	4	W.	— 1.3
	5	E.	— 1.4
	6	W.	— 1.9
	7	S.	— 1.5
Mean			— 1.38
Div., Flex., etc.			+ 0.25

μ Aquarii — h. m. s. 20 46 17; ° ′ ″ 99 25 30.88

			″
July	28	R.	— 2.3
Nov.	24	W.	— 1.2
Mean			— 1.75
Div., Flex., etc.			+ 2.39

ν Cygni — h. m. s. 20 52 46; ° ′ ″ 49 17 11.90

			″
Feb.	24	S.	— 1.0
March	2	W.	+ 0.6
Oct.	3	S.	— 1.3
Nov.	24	W.	— 2.4
Mean			— 1.02
Div., Flex., etc.			+ 1.59

12-Yr. Cat. 1879 — h. m. s. 20 52 54; ° ′ ″ 9 53 27.70

			″
July	28	R.	— 1.9
Div., Flex., etc.			+ 1.44

12-Yr. Cat. 1879, S. P., 350 ° 6 ′ 32.30 ″

			″
March	29	S.	+ 0.3
April	12	W.	+ 1.0
	17	E.	— 1.8
Nov.	2	W.	— 2.3
	20	W.	— 0.8
	22	W.	— 1.2
Mean			— 0.80
Div., Flex., etc.			+ 1.48

61¹ Cygni — h. m. s. 21 1 36; ° ′ ″ 51 49 49.04

			″
March	2	W.	+ 0.3
	14	W.	— 2.3
Mean			— 1.00
Div., Flex., etc.			+ 1.93

ζ Cygni — h. m. s. 21 7 55; ° ′ ″ 60 15 23.69

			″
Feb.	24	S.	— 1.3
	26	W.	— 2.8
March	2	W.	— 0.9
	9	R.	— 2.4
	12	S.	— 2.2

ζ Cygni—Continued.

			″
July	28	R.	— 2.1
Oct.	3	S.	— 3.1
	14	W.	— 2.8
Mean			— 2.20
Div., Flex., etc.			+ 2.27

α Cephei — h. m. s. 21 15 46; ° ′ ″ 27 54 50.89

			″
Feb.	26	W.	— 1.5
March	2	W.	— 0.3
	9	R.	— 2.4
April	12	W.	+ 0.3
Oct.	3	S.	— 3.2
Mean			— 1.42
Div., Flex., etc.			+ 1.76

α Cephei (Ref.).

			″
Oct.	3	S.	— 0.2
Div., Flex., etc.			+ 0.14

α Cephei, S. P. . . . 332 ° 5 ′ 9.11 ″

			″
April	17	E.	— 2.7
	24	W.	— 4.1
	27	R.	— 3.4
Mean			— 3.40
Div., Flex., etc.			+ 1.10

ι Pegasi — h. m. s. 21 16 38; ° ′ ″ 70 41 59.15

			″
Oct.	14	W.	— 2.1
Div., Flex., etc.			+ 2.34

β Aquarii — h. m. s. 21 25 21; ° ′ ″ 96 5 22.65

			″
April	12	W.	— 1.2
Aug.	8	W.	— 3.2
Mean			— 2.20
Div., Flex., etc.			+ 2.36

β Cephei — h. m. s. 21 27 8; ° ′ ″ 19 57 25.95

			″
Feb.	26	W.	— 2.3
March	2	W.	— 1.7
	9	R.	— 2.4
	22	W.	— 0.8
Oct.	14	W.	— 2.2
Mean			— 1.88
Div., Flex., etc.			+ 1.83

β Cephei (Ref.).

			″
Oct.	14	W.	— 1.2
Div., Flex., etc.			— 0.03

β Cephei, S. P. . . . 340 ° 2 ′ 34.05 ″

			″
April	12	W.	+ 0.7
	18	W.	+ 0.1
Nov.	2	W.	— 0.4
	29	W.	— 1.8
Dec.	4	W.	— 0.4
Mean			— 0.36
Div., Flex., etc.			+ 1.16

ε Pegasi — h. m. s. 21 38 23; ° ′ ″ 80 39 55.53

			″
Jan.	23	E.	— 1.7
March	2	W.	— 1.5
	9	R.	— 0.9
	22	W.	— 2.7
	24	W.	— 2.8
Aug.	14	W.	— 3.5
Sept.	29	W.	— 2.3
Oct.	14	W.	— 3.2
Mean			— 2.32
Div., Flex., etc.			+ 2.58

ε Pegasi (Ref.).

			″
Sept.	29	W.	+ 2.8
Oct.	14	W.	+ 1.8
Mean			+ 2.30
Div., Flex., etc.			— 0.80

11 Cephei — h. m. s. 21 40 11; ° ′ ″ 19 13 54.23

			″
Oct.	3	S.	— 2.1
Div., Flex., etc.			+ 1.82

11 Cephei, S. P. . . 340 ° 46 ′ 5.77 ″

			″
March	23	W.	— 1.9
Div., Flex., etc.			+ 1.18

μ Capricorni — h. m. s. 21 46 52; ° ′ ″ 104 6 23.75

			″
Oct.	3	S.	— 3.2
Div., Flex., etc.			+ 2.43

79 Draconis, S. P. — h. m. s. 21 51 24; ° ′ ″ 343 8 38.97

			″
Feb.	27	R.	— 0.7
March	2	R.	+ 0.8
	23	W.	— 1.0
	30	R.	— 0.2
May	1	R.	— 1.7
Nov.	18	W.	— 2.4
Mean			— 0.87
Div., Flex., etc.			+ 1.21

α AQUARII . . . . h. m. s. 21 59 43; ° ′ ″ 90 53 33.35

				″
Feb.	1	S.	—	1.4
March	22	W.	—	2.8
	24	W.	—	3.3
April	12	W.	—	0.7
July	28	R.	—	1.4
Aug.	14	W.	—	3.8
	22	W.	—	2.1
Nov.	1	W.	—	3.8
	6	S.	—	2.9
	8	W.	—	2.3
	21	S.	—	3.3
Mean			—	2.53
Div., Flex., etc.			+	2.52

α GRUIS . . . . . h. m. s. 22 0 47; ° ′ ″ 137 31 53.63

				″
Oct.	3	S.	+	5.8
	7	S.	+	7.9
	30	S.	+	4.7
Nov.	6	S.	+	5.3
	11	S.	+	3.3
Mean			+	5.40
Div., Flex., etc.			+	1.98

θ AQUARII . . . . h. m. s. 22 10 36; ° ′ ″ 98 22 13.34

				″
Aug.	22	W.	—	2.4
Sept.	18	W.	—	3.0
Oct.	4	W.	-	3.1
	7	S.	—	2.6
	30	S.	—	3.7
Nov.	1	W.	—	3.4
	6	S.	—	3.3
	8	W.	—	2.4
	11	S.	—	3.7
	16	S.	—	3.1
	20	S.	—	3.8
	21	S.		4.3
	23	S.	-	2.2
Mean			—	3.15
Div., Flex., etc.			+	2.40

π AQUARII . . . . h. m. s. 22 19 15; ° ′ ″ 89 13 15.42

				″
Aug.	18	W.	—	2.9
	22	W.	—	3.2
Sept.	29	W.	—	3.4
Oct.	4	W.	—	2.8
	7	S.	—	2.9
Nov.	8	W.	—	2.6
	11	S.	—	3.6
	14	S.	—	3.5
	16	S.	—	2.5
	20	S.	—	3.5
	21	S.	—	3.9
	27	S.	—	1.6
	30	S.	—	1.1
Mean			—	2.88
Div., Flex., etc.			+	2.58

η AQUARII . . . . h. m. s. 22 29 18; ° ′ ″ 90 43 31.13

				″
Aug.	18	W.	—	2.7
Sept.	18	W.	—	2.1
Oct.	4	W.	—	2.5
	7	S.	—	2.6
	30	S.	—	3.4
Nov.	6	S.	—	2.3
	11	S.	—	2.8
	14	S.	—	2.8
	15	W.	—	2.8
	20	S.	—	3.2
	21	W.	—	4.6
	23	W.	—	1.4
	25	S.	—	3.0
	27	S.	—	2.0
	30	S.	—	1.7
Dec.	3	S.	—	3.6
	11	S.	—	2.4
	12	S.	—	2.4
	16	S.	—	3.1
Mean			—	2.71
Div., Flex., etc.			+	2.53

226 CEPHEI . . . . h. m. s. 22 30 12; ° ′ ″ 14 22 53.85

				″
Aug.	22	W.	+	0.4
Nov.	16	S.	—	1.8
	23	S.	—	1.9
Mean			—	1.10
Div., Flex., etc.			+	1.53

226 CEPHEI, S. P. . . ° ′ ″ 345 37 6.15

				″
March	28	E.	—	0.6
April	7	R.	—	1.8
	18	W.	—	0.8
Nov.	18	W.	—	1.6
Mean			—	1.20
Div., Flex., etc.			+	1.28

ζ PEGASI . . . . . h. m. s. 22 35 35; ° ′ ″ 79 47 3.40

				″
Jan.	23	E.	—	0.8
Feb.	1	S.	—	0.7
	6	R.	(+	0.1)
	10	R.	(+	2.3)
March	24	W.	—	2.9
	30	W.	—	1.4
April	11	W.	—	4.2
	12	W.	—	2.3
Aug.	18	W.	—	3.4
	22	W.	—	2.7
Sept.	15	W.	-	2.5
	18	W.	—	2.1
	29	W.	—	2.4
Oct.	3	S.	--	2.7
	4	W.	—	3.1
	30	S.	—	3.3
Nov.	6	S.	—	3.0
	8	W.	—	2.9
	11	S.	—	2.9
	14	S.	—	3.1
	15	W.	—	3.6
	16	S.	—	2.9
	20	S.	—	2.4

ζ PEGASI—Continued.

				″
Nov.	21	W.	—	4.1
	25	W.	—	3.8
	27	S.	—	3.1
Dec.	3	S.	—	2.8
	11	S.	--	2.5
	12	S.	—	2.6
Mean			—	2.75
Div., Flex., etc.			+	2.59

ι CEPHEI . . . . . h. m. s. 22 45 29; ° ′ ″ 24 25 12.34

				″
Feb.	1	S.	—	1.2
	2	R.	—	0.8
	6	R.	—	0.7
	10	R.	—	0.6
	15	W.	—·	2.1
March	24	W.	—	0.9
	29	R.	+	0.1
	30	W.	—	1.4
April	11	W.	—	3.0
Aug.	18	W.	—	1.6
Nov.	25	S.	-	3.6
Mean			—	1.44
Div., Flex., etc.			+	1.82

ι CEPHEI, S. P. . . . ° ′ ″ 335 34 47.66

				″
April	18	W.	—	2.4
Nov.	18	W.	—	1.2
Mean			—	1.80
Div., Flex., etc.			+	1.16

λ AQUARII . . . . h. m. s. 22 46 28; ° ′ ″ 98 12 25.67

				″
Oct.	5	E.	—	3.1
Nov.	30	S.	—	2.1
Dec.	3	W.	—	1.8
	4	S.	—	2.9
	11	S.	—	2.9
	12	S.	—	3.1
	14	S.	-	1.6
	16	S.	—	3.0
	18	S.		2.0
	19	S.	-	0.3
	31	W.	—	1.1
Mean			—	2.17
Div., Flex., etc.			+	2.41

α PISCIS AUSTRALIS h. m. s. 22 51 8; ° ′ ″ 120 14 50.24

				″
Jan.	23	E.	+	0.1
Feb.	1	S.	—	1.0
	15	W.	—	2.1
April	12	R.	—	1.2
	16	E.	—	2.3
Aug.	18	W.	—	1.0
	22	W.	—	2.2
Oct.	5	E.	—	1.1
Nov.	1	W.	—	2.2
	21	W.	—	4.0
	23	W.	—	1.3
	24	S.	—	1.6
	25	S.	—	3.3
	27	W.	—	3.8

α PISCIS AUSTRALIS—Continued.

				″
Nov.	36	W.	—	2.4
Dec.	3	S.	—	1.8
	4	S.	—	2.7
	11	S.	—	0.6
	14	S.	—	0.3
	16	S.	—	1.9
	18	S.	—	0.5
	19	S.	+	0.8
	30	W.	—	0.6
	31	W.	+	0.4
Mean			—	1.52
Div., Flex., etc.			+	2.47

α PEGASI . . . . . h. m. s. 22 58 53; ° ′ ″ 75 25 45.96

				″
Jan.	23	E.	+	0.1
Feb.	1	S.	—	0.7
	6	R.	—	2.0
	10	R.	—	0.2
	15	W.	—	0.9
	17	S.	(+	1.4)
March	22	W.	—	0.2
	24	W.	—	1.2
	29	R.	—	1.2
	30	W.	—	1.4
April	11	W.	—	3.1
	12	R.	—	2.2
	16	E.	—	1.7
	19	S.	—	0.9
Aug.	22	W.	—	2.6
Oct.	5	E.	—	3.2
Nov.	1	W.	—	2.6
Dec.	16	S.	—	3.2
	18	S.	—	2.4
	19	S.	—	1.6
	30	W.	—	1.8
	31	W.	—	1.1
Mean			—	1.62
Div., Flex., etc.			+	2.42

ο CEPHEI . . . . . h. m. s. 23 13 47; ° ′ ″ 22 32 2.11

				″
Nov.	1	W.	—	1.2
Dec.	4	S.	—	1.6
	31	W.	—	1.1
Mean			—	1.30
Div., Flex., etc.			+	1.77

θ PISCIUM . . . . . h. m. s. 23 21 59; ° ′ ″ 84 16 8.94

				″
Feb.	10	R.	(+	2.9)
Nov.	6	S.	—	4.0
Dec.	4	S.	—	3.9
	11	S.	—	3.6
	12	S.	—	3.7
	14	S.	—	3.1
	18	S.	—	3.0
	19	S.	—	2.3
	30	W.	—	2.7
	31	W.	—	2.8
Mean			—	3.23
Div., Flex., etc.			+	2.51

ι PISCIUM . . . . . h. m. s. 23 33 53; ° ′ ″ 85 0 47.46

				″
Feb.	15	W.	—	1.7
Sept.	29	W.	—	2.5
Oct.	4	W.	—	3.8
Nov.	11	S.	—	3.2
	16	S.	—	3.2
	21	W.	—	3.5
	23	S.	—	3.0
	24	S.	—	3.2
	25	W.	(—	5.1)
	27	W.	—	2.9
	30	S.	—	3.6
Dec.	2	W.	—	3.0
	3	W.	—	4.2
	6	W.	—	2.5
	14	S.	—	3.4
	30	W.	—	2.8
	31	W.	—	2.0
Mean			—	3.03
Div., Flex., etc.			+	2.50

γ CEPHEI . . . . . h. m. s. 23 34 31; ° ′ ″ 13 1 34.62

				″
Feb.	10	R.		1.3
March	29	R.	—	2.4

γ CEPHEI—Continued.

				″
April	12	R.	—	0.4
	16	E.	—	2.4
	17	W.	—	0.7
Dec.	11	S.	—	2.1
	18	S.	—	1.3
	19	S.	—	3.8
	30	W.	—	1.5
Mean			—	1.77
Div., Flex., etc.			+	1.49

γ CEPHEI, S. P. . . . 346 58 25.38 (° ′ ″)

				″
April	13	R.	—	1.1
	17	E.	+	0.1
	27	R.	—	2.0
May	25	R.	—	1.1
Mean			—	1.02
Div., Flex., etc.			+	1.34

GROOMBRIDGE 4163 . h. m. s. 23 49 6; ° ′ ″ 16 14 46.72

				″
Sept.	15	W.	—	1.4
	29	W.	—	1.3
Nov.	15	W.	—	2.5

GROOMBRIDGE 4163—Continued.

				″
Nov.	20	S.	—	2.1
	21	W.	—	2.8
	24	W.	—	2.4
	27	W.	—	1.5
Dec.	3	W.	—	1.9
	6	W.	—	1.6
Mean			—	1.94
Div., Flex., etc.			+	1.69

GROOMBRIDGE 4163 (Ref.).

				″
Nov.	24	W.	+	1.5
	27	W.	—	0.1
Dec.	6	W.	—	0.4
Mean			+	0.33
Div., Flex., etc.			+	0.04

GROOM. 4163, S. P. . 343 45 13.18 (° ′ ″)

				″
April	18	W.		0.0
May	18	W.	+	0.9
Mean			+	0.45
Div., Flex., etc.			+	1.23

ω PISCIUM . . . . h. m. s. 23 53 15; ° ′ ″ 83 47 24.02

ω PISCIUM—Continued.

				″
Feb.	15	W.	—	0.6
	27	W.	—	4.2
Sept.	15	W.	—	1.8
	29	W.	—	2.2
Oct.	3	S.	—	2.0
	7	S.	—	3.7
	31	W.	—	2.1
Nov.	8	W.	—	2.9
	14	S.	—	2.6
	15	W.	—	1.8
	21	S.	—	3.4
	23	W.	—	2.4
	24	W.	—	4.0
	25	S.	—	3.3
	27	S.	—	3.1
Dec.	2	W.	—	1.6
	3	S.	—	2.7
	14	S.	—	3.8
	16	S.	—	2.2
	18	S.	—	2.6
	19	S.	—	3.0
Mean			—	2.67
Div., Flex., etc.			+	2.53

ω PISCIUM (Ref.).

				″
Nov.	8	W.	+	1.0
	14	S.	+	2.0
Mean			+	1.50
Div., Flex., etc.			—	0.88

MEAN PLACE

OF

MISCELLANEOUS STARS

GIVEN BY

INDIVIDUAL OBSERVATIONS

WITH THE

TRANSIT CIRCLE.

1882.

MEAN PLACES OF MISCELLANEOUS STARS FOR 1882.0,

GIVEN BY

INDIVIDUAL OBSERVATIONS

WITH

THE TRANSIT CIRCLE.

22 Andromedæ.

	h. m. s.	° ′ ″
Dec. 6 W.	0 4 11.41	44 35 2.0
Div., Flex., etc.	. .	+ 1.30

σ Andromedæ.

	h. m. s.	° ′ ″
Dec. 6 W.	0 12 9.91	53 52 6.0
Div., Flex., etc.	. .	+ 2.09

ι Ceti.

	h. m. s.	° ′ ″
Dec. 26 S.	0 13 24.89	99 28.7

Anonymous.

	h. m. s.	° ′ ″
Sept. 15 W.	0 14 2.53	75 54 8.8
Div., Flex., etc.	. .	+ 2.44

B. A. C. 79.

	h. m. s.	° ′ ″
Nov. 14 S.	0 17 . .	38 38 1.6
15 W.	. .	2.9
21 S.	. .	2.0
23 S.	54.58	1.2
24 S.	54.65	2.3
25 W.	54.58	2.8
Mean . . .	0 17 54.60	38 38 2.13
Div., Flex., etc.	. .	+ 1.53

B. A. C. 79 (Ref.).

	h. m. s.	° ′ ″
Nov. 14 S.	0 17 . .	38 38 3.9
15 W.	. .	1.7
21 S.	. .	3.9
23 S.	. .	2.6
24 S.	. .	3.3
25 W.	. .	3.3
Mean . . .	. .	38 38 3.12
Div., Flex., etc.	. .	+ 0.14

44 Piscium.

	h. m. s.	° ′ ″
Sept. 15 W.	0 19 21.21	88 42 47.1
Div., Flex., etc.	. .	+ 2.57

B. A. C. 126.

	h. m. s.	° ′ ″
Oct. 30 S.	0 26.3	27 43 9.4
Div., Flex., etc.	. .	+ 1.76

B. A. C. 126 (Ref.).

	h. m. s.	° ′ ″
Oct. 30 S.	0 26.3	27 43 11.3
Div., Flex., etc.	. .	+ 0.13

B. A. C. 166.

	h. m. s.	° ′ ″
Nov. 15 W.	0 33 . .	59 47 3.9
23 W.	1.34	3.5
24 W.	1.27	4.2
27 S.	. .	3.7
Mean . . .	0 33 1.30	59 47 3.82
Div., Flex., etc.	. .	+ 2.26

B. A. C. 166 (Ref.).

	h. m. s.	° ′ ″
Nov. 15 W.	0 33 . .	59 47 5.9
23 W.	. .	6.1
24 W.	. .	5.2
27 S.	. .	6.0
Mean . . .	. .	59 47 5.80
Div., Flex., etc.	. .	— 0.19

o Cassiopeæ.

	h. m. s.	° ′ ″
Nov. 20 S.	0 38 . .	42 21 40.1
25 S.	9.23	41.6
Dec. 6 W.	9.40	41.2
Mean . . .	0 38 9.32	42 21 40.97
Div., Flex., etc.	. .	+ 1.40

o Cassiopeæ (Ref.)

	h. m. s.	° ′ ″
Nov. 20 S.	0 38 . .	42 21 41.8
25 S.	. .	42.3
Mean . . .	. .	42 21 42.05
Div., Flex., etc.	. .	+ 0.22

Lalande 1251, 2.

	h. m. s.	° ′ ″
Oct. 31 W.	0 40 40.20	95 3 47.8
Div., Flex., etc.	. .	+ 2.32

δ Piscium.

	h. m. s.	° ′ ″
Nov. 8 W.	0 42 33.70	83 3 24.0
21 W.	33.55	23.2
25 W.	33.63	23.2
Dec. 26 S.	33.65	. .
Mean . . .	0 42 33.63	83 3 23.47
Div., Flex., etc.	. .	+ 2.55

B. A. C. 253.

	h. m. s.	° ′ ″
April 27 W.	0 49 35.66	29 55 19.3
Div., Flex., etc.	. .	+ 1.73

μ Andromedæ.

	h. m. s.	° ′ ″
Dec. 26 S.	0 50 12.44	52 8.4

D. M. + 60°, 146.

	h. m. s.	° ′ ″
Nov. 8 W.	0 55 20.40	29 2 51.5
21 W.	20.61	54.3
Mean . . .	0 55 20.50	29 2 52.90
Div., Flex., etc.	. .	+ 1.75

70 Piscium.

	h. m. s.	° ′ ″
Nov. 24 W.	0 55 58.72	82 41 41.8
25 W.	58.71	43.4
Mean . . .	0 55 58.72	82 41 42.60
Div., Flex., etc.	. .	+ 2.57

B. A. C. 302.

	h. m. s.	° ′ ″
Nov. 8 W.	0 58 56.97	27 52 11.2
Div., Flex., etc.	. .	+ 1.76

B. A. C. 326.

	h. m. s.	° ′ ″
Nov. 15 W.	1 2 6.66	123 26 33.8
Div., Flex., etc.	. .	+ 2.29

B. A. C. 362.

	h. m. s.	° ′ ″
Nov. 8 W.	1 6 48.89	121 25 33.9
15 W.	48.74	35.1
Mean . . .	1 6 48.82	121 25 34.50
Div., Flex., etc.	. .	+ 2.38

Taylor 407.

	h. m. s.	° ′ ″
Nov. 8 W.	1 9 51.92	136 9 47.7
15 W.	51.81	44.6
Mean . . .	1 9 51.86	136 9 46.15
Div., Flex., etc.	. .	+ 1.94

B. A. C. 466.

	h. m. s.	° ′ ″
Nov. 15 W.	1 27 39.33	127 28 16.5
Div., Flex., etc.	. .	+ 2.16

B. A. C. 489.

	h. m. s.	° ′ ″
Nov. 8 W.	1 30 41.44	120 30 41.1
Div., Flex., etc.	. .	+ 2.44

ν Piscium.

	h. m. s.	° ′ ″
Dec. 26 S.	1 35 17.48	85 6.6

B. A. C. 558.

	h. m. s.	° ′ ″
Nov. 8 W.	1 44 14.74	35 26 14.8
15 W.	14.83	14.4
Mean . . .	1 44 14.78	35 26 14.60
Div., Flex., etc.	. .	+ 1.55

ζ Ceti.

	h. m. s.	° ′ ″
May 29 W.	1 45 38.29	100 55 3.4
Div., Flex., etc.	. .	+ 2.40

Cassiopeæ.

	h. m. s.	° ′ ″
Dec. 26 S.	1 45 55.21	26 54.7

B. A. C. 570.

	h. m. s.	° ′ ″
Nov. 15 W.	1 46 24.44	130 25 7.5
Div., Flex., etc.	. .	+ 2.15

Taylor 660.

	h. m. s.	° ′ ″
Nov. 15 W.	1 54 31.26	131 17 57.5
Div., Flex., etc.	. .	+ 2.09

B. A. C. 627.

	h. m. s.	° ′ ″
Nov. 15 W.	1 55 58.72	120 34 7.1
Div., Flex., etc.	. .	+ 2.44

γ Andromedæ.

	h. m. s.	° ′ ″
May 25 W.	1 56 39.57	48 14 13.2
Dec. 26 S.	39.72	. .
Mean . . .	1 56 39.64	48 14 13.2
Div., Flex., etc.	. .	+ 1.53

β Trianguli.

	h. m. s.	° ′ ″
Mar. 25 W.	2 2.5	55 34 16.4
Div., Flex., etc.	. .	+ 2.17

67 Ceti.

	h. m. s.	° ′ ″
Dec. 26 S.	2 11 5.93	96 57.9

i^2 Cassiopeæ, S. P.

	h. m. s.	° ′ ″
June 2 R. 8.7	2 19 22.74	336 52 11.5
6 R. 8.0	22.76	13.0
Mean . . .	2 19 22.75	336 52 12.25
Div., Flex., etc.	. .	+ 1.14

Anonymous.

	h. m. s.	° ′ ″
Nov. 15 W. 9.5	2 21 8.06	59 3 17.1
Div., Flex., etc.	. .	+ 2.24

B. A. C. 777, S. P.

	h. m. s.	° ′ ″
May 26 W.	2 26 50.80	342 18 1.6
Div., Flex., etc.	. .	+ 1.20

δ Ceti.

	h. m. s.	° ′ ″
July 9 W.	2 33 26.14	90 10 49.3
Dec. 26 S.	26.06	. .
Mean . . .	2 33 26.10	90 10 49.30
Div., Flex., etc.	. .	+ 2.57

B. A. C. 818.

	h. m. s.	° ′ ″
Nov. 15 W.	2 33 39.21	128 29 57.1
Div., Flex., etc.	. .	+ 2.17

B. A. C. 886.

	h. m. s.	° ′ ″
Nov. 15 W.	2 45 28.59	126 19 57.7
Div., Flex., etc.	. .	+ 2.19

B. A. C. 902.

	h. m. s.	° ′ ″
Nov. 15 W.	2 48 57.12	128 55 12.1
Div., Flex., etc.	. .	+ 2.19

47 Cephei, S. P.

	h. m. s.	° ′ ″
May 26 W.	2 50 27.91	348 56 59.2
June 2 R.	27.50	58.8
Mean . . .	2 50 27.70	348 56 59.00
Div., Flex., etc.	. .	+ 1.45

η Eridani.

	h. m. s.	° ′ ″
Dec. 26 S.	2 50 39.83	99 22.0

B. A. C. 923.

	h. m. s.	° ′ ″
Jan. 11 E.	2 52 3.85	125 51 10.7
Div., Flex., etc.	. .	+ 2.21

B. A. C. 924.

	h. m. s.	° ′ ″
Jan. 23 E.	2 52 13.43	120 19 46.2
Nov. 15 W.	13.43	48.3
Mean . . .	2 52 13.43	120 19 47.25
Div., Flex., etc.	. .	+ 2.46

O. Arg. N. 3339, S. P.

	h. m. s.	° ′ ″
May 25 R. 8.7	2 52 33.75	340 11 20.4
Div., Flex., etc.	. .	+ 1.16

B. A. C. 908, S. P.

	h. m. s.	° ′ ″
June 6 R.	2 53 30.38	351 0 41.9
Div., Flex., etc.	. .	+ 1.48

Lalande (F.) 495, S. P.

	h. m. s.	° ′ ″
May 23 E.	2 56 20.46	336 56 56.8
26 W.	21.22	58.1
June 2 R.	20.78	56.6
Mean . . .	2 56 20.82	336 56 57.17
Div., Flex., etc.	. .	+ 1.14

Bonn VI + 67°, 244, S. P.

	h. m. s.	° ′ ″
May 25 R. 8.8	2 57 13.33	337 7 2.3
29 R.	13.79	2.7
June 5 S.	13.27	3.8
Mean . . .	2 57 13.46	337 7 2.93
Div., Flex., etc.	. .	+ 1.14

β Persei.

	h. m. s.	° ′ ″
July 9 W.	3 0 29.78	49 29 57.8
Div., Flex., etc.	. .	+ 1.61

B. A. C. 997.

	h. m. s.	° ′ ″
Jan. 23 E.	3 7 3.58	119 27 6.7
Div., Flex., etc.	. .	+ 2.49

O. Arg. N. 3875.

	h. m. s.	° ′ ″
Jan. 11 E.	3 24 40.41	35 25 36.0
19 R.	40.34	36.2
Mean . . .	3 24 40.38	35 25 36.10
Div., Flex., etc.	. .	+ 1.55

B. A. C. 1122.

	h. m. s.	° ′ ″
Jan. 19 R.	3 32 35.95	126 40 51.7
23 E.	36.24	53.2
27 E.	36.09	50.4
Mean . . .	3 32 36.09	126 40 51.77
Div., Flex., etc.	. .	+ 2.17

γ Camelopardalis, S. P.

	h. m. s.	° ′ ″
June 7 W.	3 37 56.19	340 57 57.5
22 R.	55.12	58.4
July 5 W.	55.56	59.1
Mean . . .	3 37 55.62	340 57 58.33
Div., Flex., etc.	. .	+ 1.18

ε Persei.

	h. m. s.	° ′ ″
Apr. 18 W.	3 49 56.22	50 19 56.1
June 5 R.	56.20	54.8
Mean . . .	3 49 56.21	50 19 55.45
Div., Flex., etc.	. .	+ 1.70

B. A. C. 1227.

	h. m. s.	° ′ ″
Jan. 19 R.	3 50 15.29	130 42 19.6
Div., Flex., etc.	. .	+ 2.13

c Persei.

	h. m. s.	° ′ ″
Jan. 19 R.	3 59.9	42 36 13.4
27 E.	. .	13.7
Feb. 6 R.	. .	13.3
Mean . . .	. .	42 36 13.47
Div., Flex., etc.	. .	+ 1.38

c Persei (Ref.).

	h. m. s.	° ′ ″
Jan. 19 R.	3 59.9	42 36 14.8
27 E.	. .	14.6
Feb. 6 R.	. .	14.1
Mean . . .	. .	42 36 14.50
Div., Flex., etc.	. .	+ 0.22

B. A. C. 1287.

	h. m. s.	° ′ ″
Feb. 1 S.	4 6.2	41 53 30.3
Div., Flex., etc.	. .	+ 1.44

B. A. C. 1287 (Ref.).

	h. m. s.	° ′ ″
Feb. 1 S.	4 6.2	41 53 31.8
Div., Flex., etc.	. .	+ 0.21

B. A. C. 1276.

	h. m. s.	° ′ ″
Jan. 23 E.	4 6 34.53	9 27 40.2
27 E.	34.16	38.5
Mean . . .	4 6 34.34	9 27 39.35
Div., Flex., etc.	. .	+ 1.43

IV, 1[1].

	h. m. s.	° ′ ″
Jan. 27 E.	4 10 29.08	119 12 55.8
Div., Flex., etc.	. .	+ 2.50

IV, 1.

	h. m. s.	° ′ ″
Jan. 27 E.	4 10 30.23	119 14 25.3
Div., Flex., etc.	. .	+ 2.50

WEISSE (2) 248.

	h. m. s.	° ′ ″
Jan. 23 E.	4 13 33.70	71 32 27.9
Feb. 6 R.	33.71	23.3
Mean . . .	4 13 33.70	71 32 25.60
Div., Flex., etc.	. .	+ 2.35

B. A. C. 1372.

	h. m. s.	° ′ ″
Jan. 19 R.	4 19 36.26	124 17 29.6
27 E.	36.42	26.7
Feb. 25 S.	36.35	30.0
Mean . . .	4 19 36.34	124 17 28.77
Div., Flex., etc.	. .	+ 2.27

WEISSE (2) 421.

	h. m. s.	° ′ ″
Jan. 23 E.	4 21 25.00	59 54 5.3
Div., Flex., etc.	. .	+ 2.27

WEISSE (2) 422.

	h. m. s.	° ′ ″
Jan. 23 E.	4 21 25.78	59 53 53.2
Div., Flex., etc.	. .	+ 2.27

θ^1 TAURI.

	h. m. s.	° ′ ″
Feb. 6 R.	4 21 50.09	74 18 3.3
Div., Flex., etc.	. .	+ 2.39

B. A. C. 1389.

	h. m. s.	° ′ ″
Jan. 19 R.	4 22 38.90	130 47 43.3
Div., Flex., etc.	. .	+ 2.12

LALANDE 8612.

	h. m. s.	° ′ ″
Jan. 27 E.	4 27 51.97	84 40 45.0
Feb. 1 S.	51.94	46.2
Mean . . .	4 27 51.96	84 40 45.60
Div., Flex., etc.	. .	+ 2.51

WEISSE (2) 650.

	h. m. s.	° ′ ″
Jan. 19 R.	4 31 18.09	69 33 11.5
27 E.	18.24	11.7
Mean . . .	4 31 18.16	69 33 11.60
Div., Flex., etc.	. .	+ 2.33

WEISSE 777.

	h. m. s.	° ′ ″
Jan. 19 R. 8.7	4 36 55.11	89 6 57.8
24 S.	55.28	57.1
Mean . . .	4 36 55.20	89 6 57.45
Div., Flex., etc.	. .	+ 2.58

D. M. + 1°, 808.

	h. m. s.	° ′ ″
Jan. 27 E.	4 37 56.24	88 8 40.0
Feb. 6 R. 9.4	56.15	39.0
Mean . . .	4 37 56.20	88 8 39.50
Div., Flex., etc.	. .	+ 2.54

D. M. + 1°, 809.

	h. m. s.	° ′ ″
Jan. 27 E	4 37 59.49	88 8 23.9
Feb. 6 R. 8.0	59.44	21.8
Mean . . .	4 37 59.46	88 8 22.85
Div., Flex., etc.	. .	+ 2.54

B. A. C. 1467.

	h. m. s.	° ′ ″
Feb. 25 S.	4 38 35.72	120 59 7.2
Div., Flex., etc.	. .	+ 2.41

B. A. C. 1483.

	h. m. s.	° ′ ″
Feb. 25 S.	4 41 54.27	129 34 13.7
Div., Flex., etc.	. .	+ 2.18

WEISSE 902.

	h. m. s.	° ′ ″
Jan. 24 S.	4 43 25.02	88 0 15.8
Div., Flex., etc.	. .	+ 2.54

IV, 6.

	h. m. s.	° ′ ″
Jan. 27 E.	4 45 46.41	117 18 9.2
Div., Flex., etc.	. .	+ 2.54

LALANDE 9258.

	h. m. s.	° ′ ″
Jan. 27 E. 8.0	4 52 50.51	29 45 6.1
Feb. 6 R. 9.0	50.33	5.5
Mean . . .	4 52 50.42	29 45 5.80
Div., Flex., etc.	. .	+ 1.74

B. A. C. 1536.

	h. m. s.	° ′ ″
Jan. 27 E.	4 52 55.41	29 43 54.4
Feb. 6 R.	55.56	54.1
17 S.	. .	58.8
Mean . . .	4 52 55.48	29 43 55.77
Div., Flex., etc.	. .	+ 1.74

B. A. C. 1536 (Ref.).

	h. m. s.	° ′ ″
Feb. 17 S.	4 52 . .	29 43 56.4
Div., Flex., etc.	. .	+ 0.17

B. A. C. 1555.

	h. m. s.	° ′ ″
Jan. 24 S.	4 57 19.67	68 53 17.7
Div., Flex., etc.	. .	+ 2.33

WEISSE 1296.

	h. m. s.	° ′ ″
Jan. 27 E.	4 59 18.09	88 59 5.5
Feb. 1 S.	18.21	6.6
6 R.	18.10	6.2
Mean . . .	4 59 18.13	88 59 6.10
Div., Flex., etc.	. .	+ 2.58

WEISSE (2) 1421[1].

	h. m. s.	° ′ ″
Jan. 23 E.	5 2 20.56	62 7 12.9
27 E. 7.0	20.59	13.7
Feb. 10 R. 6.8	20.58	13.7
Mean . . .	5 2 20.58	62 7 13.43
Div., Flex., etc.	. .	+ 2.30

WEISSE (2) 1421[2].

	h. m. s.	° ′ ″
Jan. 23 E.	5 2 21.01	62 7 2.0
27 E. 8.5	21.06	2.5
Feb. 10 R. 8.2	21.10	3.0
Mean . . .	5 2 21.06	62 7 2.50
Div., Flex., etc.	. .	+ 2.30

BONN VI + 62°, 742.

	h. m. s.	° ′ ″
Feb. 10 R.	5 9 21.69	27 28 30.6
Div., Flex., etc.	. .	+ 1.77

B. A. C. 1633.

	h. m. s.	° ′ ″
Jan. 19 R.	5 10 18.51	126 6 45.6
24 S.	18.50	43.4
Mean . . .	5 10 18.50	126 6 44.50
Div., Flex., etc.	. .	+ 2.19

WEISSE (2) 245.

	h. m. s.	° ′ ″
Jan. 23 E.	5 10 57.01	56 36.2

WEISSE (2) 247.

	h. m. s.	° ′ ″
Jan. 23 E.	5 10 57.39	56 36.0

B. A. C. 1619.

	h. m. s.	° ′ ″
Feb. 1 S.	5 11 16.49	12 8 4.5
Div., Flex., etc.	. .	+ 1.49

WEISSE (2) 266.

	h. m. s.	° ′ ″
Jan. 27 E.	5 12 57.70	49 2 11.7
Div., Flex., etc.	. .	+ 1.57

B. A. C. 1661.

	h. m. s.	° ′ ″
Jan. 23 E.	5 15 53.33	86 32 41.4
27 E.	53.39	39.7
Mean . . .	5 15 53.36	86 32 40.55
Div., Flex., etc.	. .	+ 2.50

Weisse 342.

		h. m. s.	° ′ ″
Jan. 23	E.	5 16 37.95	86 34 11.1
27	E.	37.85	10.1
Mean . . .		5 16 37.90	86 34 10.60
Div., Flex., etc.		. .	+ 2.50

Weisse 343.

		h. m. s.	° ′ ″
Jan. 27	E. 8.0	5 16 38.93	86 33 42.7
Div., Flex., etc.		. .	+ 2.50

B. A. C. 1719.

		h. m. s.	° ′ ″
Feb. 2	R.	5 23 18.07	131 2 47.8
Div., Flex., etc.		. .	+ 2.11

B. A. C. 1718.

		h. m. s.	° ′ ″
Jan. 19	R.	5 23 27.14	122 30 50.9
Div., Flex., etc.		. .	+ 2.32

Weisse 619.

		h. m. s.	° ′ ″
Jan. 23	E.	5 26 43.22	91 40 40.4
Feb. 2	R.	43.16	41.8
Mean . . .		5 26 43.19	91 40 41.1
Div., Flex., etc.		. .	+ 2.46

B. A. C. 1739.

		h. m. s.	° ′ ″
Jan. 27	E.	5 27 1.59	125 33 28.8
Div., Flex., etc.		. .	+ 2.22

B. A. C. 1756.

		h. m. s.	° ′ ″
Jan. 19	R.	5 28 53.01	128 35 46.7
Div., Flex., etc.		. .	+ 2.18

B. A. C. 1753.

		h. m. s.	° ′ ″
Feb. 1	S.	5 28 54.21	125 13 17.6
10	R.	54.04	17.3
Mean . . .		5 28 54.12	125 13 17.45
Div., Flex., etc.		. .	+ 2.24

Lalande 10527.

		h. m. s.	° ′ ″
Jan. 23	E. 6.0	5 29 15.00	96 5 17.8
Div., Flex., etc.		. .	+ 2.37

B. A. C. 1752.

		h. m. s.	° ′ ″
Jan. 23	E. 7.0	5 29 16.66	96 4 51.8
Div., Flex., etc.		. .	+ 2.37

ι^1 Orionis.

		h. m. s.	° ′ ″
Jan. 27	E.	5 29 39.66	95 59 17.4
Div., Flex., etc.		. .	+ 2.36

ι^2 Orionis.

		h. m. s.	° ′ ″
Jan. 27	E. 8.0	5 29 40.21	95 59 26.7
Div., Flex., etc.		. .	+ 2.36

Lalande 10583.

		h. m. s.	° ′ ″
Feb. 2	R.	5 32 2.63	55 32 36.3
6	R. 8.8	2.67	35.7
Mean . . .		5 32 2.65	55 32 36.00
Div., Flex., etc.		. .	+ 2.17

Lalande 10597.

		h. m. s.	° ′ ″
Feb. 10	R.	5 32 35.60	55 31 3.0
Div., Flex., etc.		. .	+ 2.17

B. A. C. 1848.

		h. m. s.	° ′ ″
Jan. 19	R.	5 43 31.92	62 4 6.1
Div., Flex., etc.		. .	+ 2.30

Lalande 11061.

		h. m. s.	° ′ ″
Jan. 23	E.	5 43 58.29	85 36 41.9
24	S.	58.29	40.2
Feb. 1	S.	58.33	42.2
Mean . . .		5 43 58.30	85 36 41.43
Div., Flex., etc.		. .	+ 2.50

Lalande 11040.

		h. m. s.	° ′ ″
Feb. 15	W.	5 44 6.55	59 4 37.9
23	W.	6.49	35.6
24	R. 7.8	6.47	36.7
Mean . . .		5 44 6.50	59 4 36.73
Div., Flex., etc.		. .	+ 2.25

B. A. C. 1849.

		h. m. s.	° ′ ″
Feb. 25	S.	5 44 23.90	30 8 25.8
Div., Flex., etc.		. .	+ 1.72

D. M. + 31°, 1126.

		h. m. s.	° ′ ″
Feb. 3	W.	5 44 50.89	58 14 37.5
10	R. 9.5	50.55	40.5
Mean . . .		5 44 50.72	58 14 39.00
Div., Flex., etc.		. .	+ 2.23

Lalande 11088.

		h. m. s.	° ′ ″
Mar. 4	E.	5 45 24.02	70 9 47.0
Div., Flex., etc.		. .	+ 2.33

B. A. C. 1865.

		h. m. s.	° ′ ″
Mar. 2	R.	5 45 24.56	120 39 22.4
Div., Flex., etc.		. .	+ 2.43

B. A. C. 1889.

		h. m. s.	° ′ ″
Feb. 23	W.	5 48 31.74	127 39 25.2
Div., Flex., etc.		. .	+ 2.16

B. A. C. 1892.

		h. m. s.	° ′ ″
Mar. 2	R.	5 48 50.60	128 33 8.7
Div., Flex., etc.		. .	+ 2.18

β Aurigæ.

		h. m. s.	° ′ ″
May 30	W.	5 50 52.53	45 3 58.2
Div., Flex., etc.		. .	+ 1.30

B. A. C. 1904.

		h. m. s.	° ′ ″
Feb. 23	W.	5 51 1.95	129 58.44.7
Div., Flex., etc.		. .	+ 2.17

B. A. C. 1906.

		h. m. s.	° ′ ″
Feb. 25	S.	5 51 26.55	127 8 17.4
Mar. 2	R.	26.29	21.5
Mean . . .		5 51 26.42	127 8 19.45
Div., Flex., etc.		. .	+ 2.16

Taylor 2245.

		h. m. s.	° ′ ″
Feb. 3	W.	5 52 24.74	121 59 30.0
Div., Flex., etc.		. .	+ 2.34

χ^3 Orionis.

		h. m. s.	° ′ ″
Jan. 14	W.	5 56 28.17	70 18 29.8
29	S.	28.21	33.8
Mean . . .		5 56 28.19	70 18 31.80
Div., Flex., etc.		. .	+ 2.33

χ^4 Orionis.

		h. m. s.	° ′ ″
Jan. 23	E.	5 56 54.75	69 51 35.0
24	S.	54.70	34.5
Mean . . .		5 56 54.72	69 51 34.75
Div., Flex., etc.		. .	+ 2.33

D. M. + 17°, 1115.

		h. m. s.	° ′ ″
Jan. 27	E.	5 58 14.46	72 4 1.3
Feb. 2	R. 9.3	14.52	2.9
6	R. 9.6	14.48	4.0
Mean . . .		5 58 14.49	72 4 2.73
Div., Flex., etc.		. .	+ 2.36

Anonymous.

		h. m. s.	° ′ ″
Jan. 27	E.	5 58 16.79	72 2 25.4
Feb. 2	R. 10.2	16.62	22.0
6	R. 10.5	16.73	22.6
Mean . . .		5 58 16.71	72 2 23.33
Div., Flex., etc.		. .	+ 2.36

Piazzi 333.

		h. m. s.	° ′ ″
Mar. 2	R. 8.0	6 2 34.29	41 15 52.2
Div., Flex., etc.		. .	+ 1.47

Piazzi 334.

		h. m. s.	° ′ ″
Mar. 2	R. 6.8	6 2 34.28	41 15 59.8
29	S.	34.25	16 1.9
Mean . . .		6 2 34.26	41 16 0.85
Div., Flex., etc.		. .	+ 1.47

B. A. C. 1982.

		h. m. s.	° ′ ″
Mar. 4	E.	6 3 28.98	127 14 11.9
Div., Flex., etc.		. .	+ 2.16

Weisse (2) 26.

		h. m. s.	° ′ ″
Feb. 15	W.	6 4 36.41	57 16 56.4
23	W.	36.42	54.5
Mean . . .		6 4 36.42	57 16 55.45
Div., Flex., etc.		. .	+ 2.22

η GEMINORUM.

		h. m. s.	° ′ ″
Feb. 2	R.	6 7 45.21	67 27 37.4
Div., Flex., etc.		. .	+ 2.32

WEISSE 272.

		h. m. s.	° ′ ″
Feb. 17	S.	6 11 22.67	75 34 27.9
Div., Flex., etc.		. .	+ 2.42

B. A. C. 2036.

		h. m. s.	° ′ ″
Feb. 2	R.	6 13 0.22	127 41 50.1
Div., Flex., etc.		. .	+ 2.16

B. A. C. 2037.

		h. m. s.	° ′ ″
Mar. 4	E.	6 13 6.73	127 12 31.1
Div., Flex., etc.		. .	+ 2.16

ANONYMOUS.

		h. m. s.	° ′ ″
Feb. 24	R. 9.2	6 13 47.90	23 38 8.6
25	S.	47.36	10.4
Mean . . .		6 13 47.63	23 38 9.50
Div., Flex., etc.		. .	+ 1.79

LALANDE 12148, (*med.*).

		h. m. s.	° ′ ″
Feb. 3	W.	6 15 57.05	72 22 8.9
17	S.	57.25	7.6
Mean . . .		6 15 57.15	72 22 8.25
Div., Flex., etc.		. .	+ 2.36

B. A. C. 2066.

		h. m. s.	° ′ ″
Mar. 2	R.	6 17 47.95	123 22 39.1
Div., Flex., etc.		. .	+ 2.29

B. A. C. 2072.

		h. m. s.	° ′ ″
Feb. 2	R.	6 18 47.31	120 53 6.2
Div., Flex., etc.		. .	+ 2.42

ν GEMINORUM.

		h. m. s.	° ′ ″
Feb. 23	W.	6 22.0 . .	69 42 51.6
Div., Flex., etc.		. .	+ 2.33

O. ARG. S. 5133.

		h. m. s.	° ′ ″
Jan. 14	W.	6 22 25.94	115 46 40.0
27	E.	26.24	40.9
Feb. 3	W.	26.21	40.4
Mar. 14	R. 6.8	26.12	41.3
Mean . . .		6 22 26.13	115 46 40.65
Div., Flex., etc.		. .	+ 2.60

O. ARG. S. 5144.

		h. m. s.	° ′ ″
Feb. 3	W.	6 22 55.63	115 45 58.2
Mar. 2	R. 9.3	55.70	59.6
14	R. 8.8	55.74	59.3
Mean . . .		6 22 55.69	115 45 59.03
Div., Flex., etc,		. .	+ 2.60

D. M. + 72°, 325.

		h. m. s.	° ′ ″
Jan. 27	E.	6.25 2.66	17 24 34.0
Feb. 2	R. 9.2	2.50	34.0
10	R. 9.3	2.91	34.9
Mean . . .		6 25 2.69	17 24 34.30
Div., Flex., etc.		. .	+ 1.78

D. M. + 72°, 325, S. P.

		h. m. s.	° ′ ″
Aug. 14	W.	6 25 2.43	342 35 24.5
17	W.	2.43	22.4
20	W.	2.79	25.3
Mean . . .		6 25 2.55	342 35 24.07
Div., Flex., etc.		. .	+ 1.20

LALANDE 12494.

		h. m. s.	° ′ ″
Feb.	R.	6 25 13.41	78 22 27.7
Div., Flex., etc.		. .	+ 2.55

O. ARG. N. 6978.

		h. m. s.	° ′ ″
Feb. 25	S.	6 26 35.16	18 9 19.1
Mar. 3	W.	35.43	19.1
Mean . . .		6 26 35.30	18 9 19.10
Div., Flex., etc.		. .	+ 1.80

O. ARG. N. 6979.

		h. m. s.	° ′ ″
Feb. 25	S.	6 26 37.83	18 12 10.0
Mar. 3	W.	37.85	9.0
Mean . . .		6 26 37.84	18 12 9.50
Div., Flex., etc.		. .	+ 1.80

B. A. C. 2129.

		h. m. s.	° ′ ″
Feb. 15	W.	6 26 54.11	75 45 19.4
17	S.	54.18	17.4
Mar. 31	W.	54.15	18.5
Mean . . .		6 26 54.15	75 45 18.43
Div., Flex., etc.		. .	+ 2.43

B. A. C. 2136.

		h. m. s.	° ′ ″
Mar. 4	E.	6 27 1.10	125 10 28.9
Div., Flex., etc.		. .	+ 2.24

B. A. C. 2147.

		h. m. s.	° ′ ″
Jan. 14	W.	6 28 13.98	121 56 38.0
Feb. 3	W.	14.03	34.3
Mean . . .		6 28 14.00	121 56 36.15
Div., Flex., etc.		. .	+ 2.35

B. A. C. 2153.

		h. m. s.	° ′ ″
Mar. 2	R.	6 29 12.18	128 32 9.3
Div., Flex., etc.		. .	+ 2.18

O. ARG. N. 7049.

		h. m. s.	° ′ ″
Mar. 3	W.	6 29 33.13	35 58 23.1
Div., Flex., etc.		. .	+ 1.53

O. ARG. N. 7052.

		h. m. s.	° ′ ″
Mar. 3	W.	6 29 49.57	35 57 30.2
Div., Flex., etc.		. .	+ 1.53

B. A. C. 2162.

		h. m. s.	° ′ ″
Feb. 24	R.	6 30 12.78	122 37 24.7
Div., Flex., etc.		. .	+ 2.32

B. A. C. 2164.

		h. m. s.	° ′ ″
Mar. 14	R. 6.4	6 30 26.04	123 55 3.6
Div., Flex., etc.		. .	+ 2.28

B. A. C. 2180.

		h. m. s.	° ′ ″
Feb. 2	R.	6 33 8.46	126 53 26.2
Mar. 4	E.	8.58	24.7
Mean . . .		6 33 8.52	126 53 25.45
Div., Flex., etc.		. .	+ 2.16

B. A. C. 2183.

		h. m. s.	° ′ ″
Feb. 17	S.	6 33 22.55	122 14 22.3
Mar. 2	R.	22.45	24.5
Mean . . .		6 33 22.50	122 14 23.40
Div., Flex., etc.		. .	+ 2.33

ε GEMINORUM.

		h. m. s.	° ′ ″
Jan. 27	E.	6 36 . .	64 45 12.0
Feb. 23	W.	. .	11.0
May 30	W.	40.35	11.5
Mean . . .		6 36 40.35	64 45 11.50
Div., Flex., etc.		. .	+ 2.37

ε GEMINORUM (Ref.).

		h. m. s.	° ′ ″
Jan. 27	E.	6 36 . .	64 45 13.6
Feb. 23	W.	. .	13.5
Mean . .		6 36 . .	64 45 13.55
Div., Flex., etc.		. .	+ 0.34

B. A. C. 2202.

		h. m. s.	° ′ ″
Jan. 14	W.	6 37 23.25	130 14 17.2
Feb. 1	S.	23.43	16.3
3	W.	23.29	19.4
Mean . . .		6 37 23.32	130 14 17.63
Div., Flex., etc.		. .	+ 2.16

ψ⁵ AURIGÆ.

		h. m. s.	° ′ ″
Feb. 26	E.	6 38 13.98	46 18 24.0
Div., Flex., etc.		. .	+ 1.40

STONE 3158.

		h. m. s.	° ′ ″
Jan. 23	E.	6 38 16.13	128 16 58.1
Div., Flex., etc.		. .	+ 2.17

STONE 3159.

		h. m. s.	° ′ ″
Jan. 23	E.	6 38 16.83	128 17 0.1
Div., Flex., etc.		. .	+ 2.17

B. A. C. 2212.

		h. m. s.	° ′ ″
Feb. 15	W.	6 39 27.15	129 4 30.0
17	S.	27.03	27.5
24	R.	26.87	27.4
Mean . . .		6 39 27.02	129 4 28.30
Div., Flex., etc.		. .	+ 2.19

B. A. C. 2214.

		h. m. s.	° ′ ″
Mar. 2	R.	6 39 58.98	120 56 58.9
3	W.	58.95	59.9
Mean . . .		6 39 58.96	120 56 59.40
Div., Flex., etc.		. .	+ 2.42

D. M. + 72°, 337.

		h. m. s.	° ′ ″
Feb. 2	R. 9.4	6 40 19.82	17 25 13.4
6	R. 9.5	19.50	11.6
10	R. 9.5	19.94	12.9
Mean . . .		6 40 19.75	17 25 12.63
Div., Flex., etc.		. .	+ 1.78

B. A. C. 2218.

		h. m. s.	° ′ ″
Mar. 4	E.	6 40 58.13	121 39 31.2
Div., Flex., etc.		. .	+ 2.37

B. A. C. 2219.

		h. m. s.	° ′ ″
Mar. 2	R.	6 41 1.13	120 49 31.7
3	W.	1.13	31.7
Mean . . .		6 41 1.13	120 49 31.70
Div., Flex., etc.		. .	+ 2.42

WEISSE (2) 1227.

		h. m. s.	° ′ ″
Mar. 31	W.	6 42 0.03	57 15 39.2
Div., Flex., etc.		. .	+ 2.22

B. A. C. 2225.

		h. m. s.	° ′ ″
Mar. 13	S.	6 42 9.26	127 38 58.3
Div., Flex., etc.		. .	+ 2.16

B. A. C. 2231.

		h. m. s.	° ′ ″
Mar. 13	S.	6 43 19.17	127 47 59.9
Div., Flex., etc.		. .	+ 2.16

θ GEMINORUM.

		h. m. s.	° ′ ″
July 24	W.	6 45 0.66	55 53.8

O. ARG. N. 7287.

		h. m. s.	° ′ ″
Feb. 6	R. 8.7	6 45 31.09	15 53 23.0
10	R.	31.05	24.3
Mar. 2	R.	31.20	23.6
Mean . . .		6 45 31.11	15 53 23.63
Div., Flex., etc.		. .	+ 1.66

YARNALL 2789.*

		h. m. s.	° ′ ″
Mar. 3	W.	6 48 40.14	114 16 14.1
Div., Flex., etc.		. .	+ 2.62

* Brighter star.

YARNALL 2790.

		h. m. s.	° ′ ″
Feb. 1	S.	6 48 47.48	114 14 23.4
Mar. 3	W.	47.53	23.9
Mean . . .		6 48 47.50	114 14 23.65
Div., Flex., etc.		. .	+ 2.62

WEISSE 1452.

		h. m. s.	° ′ ″
Feb. 3	W.	6 48.8	87 48 30.5
Div., Flex., etc.		. .	+ 2.53

WEISSE 1452 (Ref.).

		h. m. s.	° ′ ″
Feb. 3	W.	6 48 . .	87 48 33.8
Div., Flex., etc.		. .	— 0.66

B. A. C. 2288.

		h. m. s.	° ′ ″
Feb. 10	R.	6 53 4.37	125 21 3.1
Div., Flex., etc.		. .	+ 2.23

STONE 3320.

		h. m. s.	° ′ ″
Feb. 10	R. 7.2	6 53 21.82	125 18 27.6
Div., Flex., etc.		. .	+ 2.23

B. A. C. 2295.

		h. m. s.	° ′ ″
Feb. 2	R.	6 54 5.90	123 57 7.6
Div., Flex., etc.		. .	+ 2.28

O. ARG. N. 7479.

		h. m. s.	° ′ ″
Feb. 17	S.	6 54 49.43	38 32 42.4
24	R.	49.45	41.6
Mar. 3	W.	. .	43.7
Mean . . .		6 54 49.44	38 32 42.57
Div., Flex., etc.		. .	+ 1.53

WEISSE (2) 1633.

		h. m. s.	° ′ ″
Mar. 4	E.	6 55 32.82	74 29 43.3
Div., Flex , etc.		. .	+ 2.39

WEISSE (2) 1630.

		h. m. s.	° ′ ″
Feb. 1	S.	6 55 33.76	72 4 39.1
Mar. 29	S.	33.66	40.2
31	W.	33.71	39.1
Mean . . .		6 53 33.71	72 4 39.47
Div., Flex., etc.		. .	+ 2.36

B. A. C. 2300[1].

		h. m. s.	° ′ ″
Feb. 24	R.	6 56 16.91	37 3 58.9
Mar. 30	R.	. .	59.9
Nov. 8	W.	. .	58.8
Mean . . .		6 56 16.91	37 3 59.20
Div., Flex., etc.		. .	+ 1.49

B. A. C. 2300[2].

		h. m. s.	° ′ ″
Feb. 24	R.	6 56 17.15	37 4 1.3
Mar. 30	R.	. .	3.0
Nov. 8	W.	. .	3.2
Mean . . .		6 56 17.15	37 4 2.50
Div., Flex., etc.		. .	+ 1.49

WEISSE (2) 1656.

		h. m. s.	° ′ ″
Jan. 27	E.	6 56 29.04	62 59 32.4
Feb. 6	R. 9.1	29.00	31.4
Mean . . .		6 56 29.02	62 59 31.90
Div., Flex., etc.		. .	+ 2.35

B. A. C. 2305.

		h. m. s.	° ′ ″
Feb. 15	W.	6 57.1	69 15 28.6
Div., Flex., etc.		. .	+ 2.33

B. A. C. 2305 (Ref.).

		h. m. s.	° ′ ″
Feb. 15	W.	6 57.1	69 15 28.4
Div., Flex., etc.		. .	— 0.50

B. A. C. 2315.

		h. m. s.	° ′ ″
Feb. 10	R.	6 57 33.29	125 22 44.3
Div., Flex., etc.		. .	+ 2.23

B. A. C. 2335.

		h. m. s.	° ′ ″
Feb. 17	S.	7 1 59.30	128 12 6.3
Mar. 25	W.	59.34	8.4
Mean . . .		7 1 59.32	128 12 7.35
Div., Flex., etc.		. .	+ 2.17

PIAZZI 344.

		h. m. s.	° ′ ″
Mar. 4	E.	7 2 13.00	132 8 45.6
13	S.	12.97	45.4
Mean . . .		7 2 12.98	132 8 45.50
Div., Flex., etc.		. .	+ 2.03

ANONYMOUS.

		h. m. s.	° ′ ″
Jan. 27	E. 8.0	7 3 21.90	116 15 34.3
Feb. 1	S.	21.95	33.5
Mean . . .		7 3 21.92	116 15 33.90
Div., Flex., etc.		. .	+ 2.58

63 AURIGÆ.

		h. m. s.	° ′ ″
Feb. 10	R.	7 3 32.35	50 29 16.9
Div., Flex., etc.		. .	+ 1.72

B. A. C. 2355.

		h. m. s.	° ′ ″
Mar. 4	E.	7 4 53.48	129 27 58.3
30	R.	. .	59.4
31	W.	53.34	. .
Mean . . .		7 4 53.41	129 27 58.85
Div., Flex., etc.		. .	+ 2.18

B. A. C. 2326.

		h. m. s.	° ′ ″
Mar. 29	S.	7 6 9.45	7 21 56.5
Div., Flex., etc.		. .	+ 1.43

D. M. + 49°, 1607.

		h. m. s.	° ′ ″
Feb. 6	R. 9.5	7 6 15.75	40 42 35.2
26	E.	15.87	38.1
Mean . . .		7 6 15.81	40 42 36.65
Div., Flex., etc.		. .	+ 1.50

D. M. + 49°, 1608.

		h. m. s.	° ′ ″
Feb. 6	R. 9.8	7 6 33.37	40 42 11.9
26	E.	33.43	13.8
Mean . . .		7 6 33.40	40 42 12.85
Div., Flex., etc.		. .	+ 1.50

B. A. C. 2372.

		h. m. s.	° ′ ″
Mar. 2	R.	7 7 22.07	128 54 28.4
Div., Flex., etc.		. .	+ 2.19

TAYLOR 2910.

		h. m. s.	° ′ ″
Jan. 27	E.	7 7 31.31	120 37 30.0
Div., Flex., etc.		. .	+ 2.44

B. A. C. 2378.

		h. m. s.	° ′ ″
Feb. 24	R.	7 8 14.24	126 20 45.8
Div., Flex., etc.		. .	+ 2.19

B. A. C. 2385.

		h. m. s.	° ′ ″
Feb. 17	S.	7 9 14.91	120 52 52.0
Mar. 13	S.	14.77	53.8
Mean . . .		7 9 14.84	120 52 52.90
Div., Flex., etc.		. .	+ 2.42

B. A. C. 2386.

		h. m. s.	° ′ ″
Mar. 28	E.	7 9 22.26	120 8 13.9
30	R.	. .	13.1
31	W.	22.27	13.3
Mean . . .		7 9 22.26	120 8 13.43
Div., Flex., etc.		. .	+ 2.47

VII, 3[1].

		h. m. s.	° ′ ″
Mar. 30	R. 7.5	7 12.4	120 41 46.7
Div., Flex., etc.		. .	+ 2.43

VII, 3[2].

		h. m. s.	° ′ ″
Mar. 30	R. 5.5	7 12 . .	120 41 7.2
31	W.	23.61	6.8
Mean . . .		7 12 23.61	120 41 7.00
Div., Flex., etc.		. .	+ 2.43

B. A. C. 2413.

		h. m. s.	° ′ ″
Feb. 24	R.	7 12 37.23	126 22 56.1
Div., Flex., etc.		. .	+ 2.18

δ[1] GEMINORUM.

		h. m. s.	° ′ ″
April 1	E.	7 13 4.26	67 48 10.4
Div., Flex., etc.		. .	+ 2.33

B. A. C. 2430.

		h. m. s.	° ′ ″
Mar. 13	S.	7 15 2.14	127 49 20.1
Div., Flex., etc.		. .	+ 2.16

WEISSE (2) 393.

		h. m. s.	° ′ ″
Mar. 2	R. 8.2	7 15 5.79	59 57 2.1
Div., Flex., etc.		. .	+ 2.27

B. A. C. 2446.

		h. m. s.	° ′ ″
Feb. 10	R.	7 18 5.44	121 49 12.3
Div., Flex., etc.		. .	+ 2.35

B. A. C. 2449.

		h. m. s.	° ′ ″
Feb. 10	R.	7 18 30.01	121 41 48.9
Div., Flex., etc.		. .	+ 2.36

B. A. C. 2439.

		h. m. s.	° ′ ″
Nov. 8	W.	7 18 35.64	21 17 42.6
Div., Flex., etc.		. .	+ 1.78

B. A. C. 2452.

		h. m. s.	° ′ ″
Mar. 4	E.	7 19 2.10	121 58 23.5
14	R.	2.08	25.4
Mean . . .		7 19 2.09	121 58 24.45
Div., Flex., etc.		. .	+ 2.34

PIAZZI 103.

		h. m. s.	° ′ ″
Mar. 30	R. 6.0	7 19.2	119 3 35.3
Div., Flex., etc.		. .	+ 2.50

B. A. C. 2456.

		h. m. s.	° ′ ″
Mar. 28	E.	7 19 17.53	119 59 14.9
Div., Flex., etc.		. .	+ 2.48

B. A. C. 2458.

		h. m. s.	° ′ ″
Mar. 29	S.	7 19 25.79	119 4 25.5
30	R. 2.0	. .	23.4
31	W.	25.65	23.2
Mean . . .		7 19 25.72	119 4 24.03
Div., Flex., etc.		. .	+ 2.50

B. A. C. 2462.

		h. m. s.	° ′ ″
Jan. 14	W.	7 20.8	81 28 24.8
Feb. 15	W.	. .	22.7
Mean . . .		. .	81 28 23.75
Div., Flex., etc.		. .	+ 2.58

B. A. C. 2462 (Ref.).

		h. m. s.	° ′ ″
Jan. 14	W.	7 20.8	81 28 28.1
Feb. 15	W.	. .	25.2
Mean . . .		. .	81 28 26.65
Div., Flex., etc.		. .	— 0.84

STONE 3672.

		h. m. s.	° ′ ″
Feb. 17	S.	7 24 19.29	121 36 18.2
24	R.	19.14	20.8
Mean . . .		7 24 19.22	121 36 19.50
Div., Flex., etc.		. .	+ 2.37

STONE 3673.

		h. m. s.	° ′ ″
Feb. 17	S.	7 24 19.92	121 36 13.8
24	R.	19.82	14.9
Mean . . .		7 24 19.87	121 36 14.35
Div., Flex., etc.		. .	+ 2.37

B. A. C. 2479.

		h. m. s.	° ′ ″
Mar. 4	E.	7 25 0.60	128 34 6.1
13	S.	0.61	6.5
14	R.	0.60	7.3
Mean . . .		7 25 0.60	128 34 6.63
Div., Flex., etc.		. .	+ 2.18

WEISSE (2) 704.

		h. m. s.	° ′ ″
Feb. 10	R. 6.8	7 25 46.34	66 51 43.2
23	W.	46.26	41.7
Mean . . .		7 25 46.30	66 51 42.45
Div., Flex., etc.		. .	+ 2.32

WEISSE (2) 703.

		h. m. s.	° ′ ″
Feb. 10	R. 9.0	7 25 46.38	66 51 54.8
23	W.	46.28	54.2
Mean . . .		7 25 46.33	66 51 54.50
Div., Flex., etc.		. .	+ 2.32

PIAZZI 137.

		h. m. s.	° ′ ″
Mar. 4	E.	7 26 7.40	120 42 52.1
Div., Flex., etc.		. .	+ 2.43

α[1] GEMINORUM.

		h. m. s.	° ′ ″
Mar. 19	W.	7 27 3.77	57 51 17.3
28	E.	3.76	16.1
April 1	E.	3.81	15.3
May 31	E.	3.75	16.4
June 27	W.	3.91	17.7
Aug. 23	W.	3.84	16.9
Mean . . .		7 27 3.81	57 51 16.62
Div., Flex., etc.		. .	+ 2.23

LALANDE 14734.

		h. m. s.	° ′ ″
Nov. 15	W.	7 27 57.54	77 26 21.5
Div., Flex., etc.		. .	+ 2.50

D. M. + 11°, 1617.

		h. m. s.	° ′ ″
Nov. 8	W. 8.7	7 28 11.89	78 10 15.0
Div., Flex., etc.		. .	+ 2.54

STONE 3761.

		h. m. s.	° ′ ″
Feb. 1	S.	7 33 6.70	126 9 6.6
10	R. 7.5	6.92	9.8
Mean . . .		7 33 6.81	126 9 8.20
Div., Flex., etc.		. .	+ 2.19

B. A. C. 2535.

		h. m. s.	° ′ ″
Feb. 23	W.	7 34 24.87	128 30 43.2
24	R.	24.79	40.7
27	R.	24.90	42.4
Mean . . .		7 34 24.85	128 30 42.10
Div., Flex., etc.		. .	+ 2.18

B. A. C. 2536.

		h. m. s.	° ′ ″
Feb. 1	S.	7 34 27.39	126 13 40.7
10	R.	27.46	41.3
Mean . . .		7 34 27.42	126 13 41.00
Div., Flex., etc.		. .	+ 2.19

B. A. C. 2543.

	h. m. s.	° ′ ″
Feb. 15 W.	7 35 17.90	128 2 15.9
Div., Flex., etc.	. .	+ 2.16

LALANDE 14961.

	h. m. s.	° ′ ″
Mar. 29 S.	7 35 24.04	75 30 58.4
30 R.	. .	58.1
31 W.	23.94	59.0
Mean . . .	7 35 23.99	75 30 58.50
Div., Flex., etc.	. .	+ 2.42

B. A. C. 2545.

	h. m. s.	° ′ ″
Mar. 2 R.	7 35 33.50	127 52 6.1
4 E.	33.79	6.2
14 R.	33.56	5.9
Mean . . .	7 35 33.62	127 52 6.07
Div., Flex., etc.	. .	+ 2.16

B. A. C. 2546.

	h. m. s.	° ′ ″
Feb. 15 W.	7 35 38.12	127 59 20.5
Div., Flex., etc.	. .	+ 2.16

B. A. C. 2547.

	h. m. s.	° ′ ″
Mar. 28 E.	7 35 45.34	127 18 25.2
Div., Flex., etc.	. .	+ 2.16

D. M. + 33°, 1572.

	h. m. s.	° ′ ″
Feb. 23 W.	7 36 41.35	56 29 4.2
Div., Flex., etc.	. .	+ 2.20

B. A. C. 2554.

	h. m. s.	° ′ ″
Mar. 13 S.	7 37 6.75	128 15 28.7
25 W.	6.91	31.9
29 S.	6.92	29.3
Mean . . .	7 37 6.86	128 15 29.97
Div., Flex., etc.	. .	+ 2.17

B. A. C. 2320, S. P.

	h. m. s.	° ′ ″
Aug. 29 W.	7 37 32.19	358 58 41.9
Sept. 1 W.	33.12	40.9
15 W.	37.94	41.2
Mean . . .	7 37 34.42	358 58 41.33
Div., Flex., etc.	. .	+ 1.53

WEISSE (2) 1083.

	h. m. s.	° ′ ″
Mar. 31 W.	7 38 46.83	52 11 52.4
Div., Flex., etc.	. .	+ 1.98

WEISSE (2) 1104.

	h. m. s.	° ′ ″
Mar. 2 R. 9.0	7 39 31.90	65 52 55.2
14 R. 8.8	32.00	55.5
Mean . . .	7 39 31.95	65 52 55.35
Div., Flex., etc.	. .	+ 2.35

B. A. C. 2568.

	h. m. s.	° ′ ″
Mar. 29 S.	7 39 32.22	127 55 13.7
Div., Flex., etc.	. .	+ 2.16

B. A. C. 2570.

	h. m. s.	° ′ ″
Mar. 4 E.	7 39 40.96	130 38 44.7
Div., Flex., etc.	. .	+ 2.13

WEISSE (2) 1117.

	h. m. s.	° ′ ″
Mar. 14 R. 8.8	7 40 6.65	66 0 1.4
Div., Flex., etc.	. .	+ 2.35

B. A. C. 2575.

	h. m. s.	° ′ ″
Feb. 15 W.	7 40 22.16	127 39 32.8
23 W.	21.94	30.7
Mar. 25 W.	22.06	35.2
Mean . . .	7 40 22.05	127 39 32.90
Div., Flex., etc.	. .	+ 2.16

LACAILLE 2956.

	h. m. s.	° ′ ″
Feb. 15 W.	7 40 52.35	127 36 8.2
23 W.	52.02	7.4
Mar. 25 W. 7.0	52.24	. .
Mean . . .	7 40 52.20	127 36 7.80
Div., Flex., etc.	. .	+ 2.16

GROOMBRIDGE 1361.

	h. m. s.	° ′ ″
Feb. 10 R. 7.3	7 40 52.84	12 7 14.8
24 R.	53.02	15.0
27 R.	52.82	16.1
Mean . . .	7 40 52.89	12 7 15.30
Div., Flex., etc.	. .	+ 1.49

GROOMBRIDGE 1361, S. P.

	h. m. s.	° ′ ″
July 28 R.	7 40 52.66	347 52 41.7
Div., Flex., etc.	. .	+ 1.39

B. A. C. 2580.

	h. m. s.	° ′ ″
Mar. 25 W.	7 41 3.04	127 41 0.2
Div., Flex., etc.	. .	+ 2.16

B. A. C. 2588.

	h. m. s.	° ′ ″
Mar. 31 W. 6.0	7 41 57.97	127 38 43.6
Div., Flex., etc.	. .	+ 2.16

B. A. C. 2591.

	h. m. s.	° ′ ″
Mar. 29 S.	7 42 20.61	127 28 57.6
Div., Flex., etc.	. .	+ 2.16

WEISSE (2) 1209.

	h. m. s.	° ′ ″
Mar. 14 R. 8.3	7 43 39.82	65 57 41.0
Div., Flex., etc.	. .	+ 2.35

B. A. C. 2608.

	h. m. s.	° ′ ″
Mar. 31 W.	7 44 50.89	124 56 49.3
Div., Flex., etc.	. .	+ 2.25

LALANDE 15290.

	h. m. s.	° ′ ″
Mar. 13 S.	7 46 0.58	59 1 56.9
30 R. 7.5	. .	53.9
Mean . . .	. .	59 1 55.40
Div., Flex., etc.	. .	+ 2.24

ANONYMOUS.

	h. m. s.	° ′ ″
Nov. 13 W.	7 48 20.35	88 0 6.0
15 W. 9.8	20.43	5.5
Mean . . .	7 48 20.39	88 0 5.75
Div., Flex., etc.	. .	+ 2.54

B. A. C. 2635.

	h. m. s.	° ′ ″
Feb. 23 W.	7 48 28.09	128 33 28.2
Mar. 28 E.	28.01	27.7
Mean . . .	7 48 28.05	128 33 27.95
Div., Flex., etc.	. .	+ 2.18

B. A. C. 2637.

	h. m. s.	° ′ ″
Mar. 30 R. 5.5	7 48 . .	126 3 27.8
31 W.	43.11	27.4
Mean . . .	7 48 43.11	126 3 27.60
Div., Flex., etc.	. .	+ 2.20

B. A. C. 2640.

	h. m. s.	° ′ ″
Mar. 25 W.	7 49 48.54	125 34 8.6
30 R.	. .	6.5
31 W.	48.50	5.9
Mean . . .	7 49 48.52	125 34 7.00
Div., Flex., etc.	. .	+ 2.22

B. A. C. 2649.

	h. m. s.	° ′ ″
Feb. 3 W.	7 51 47.51	73 9 50.2
23 W.	47.55	51.9
Mean . . .	7 51 47.53	73 9 51.05
Div., Flex., etc.	. .	+ 2.37

BONN VI, + 23°, 1861.

	h. m. s.	° ′ ″
Mar. 28 E. 9.5	7 51 47.56	66 20 42.4
Div., Flex., etc.	. .	+ 2.34

LALANDE 15548.

	h. m. s.	° ′ ″
Feb. 10 R. 7.8	7 52 40.69	66 29 50.9
Mar. 2 R. 8.3	40.66	51.8
14 R. 8.3	40.66	50.9
Mean . . .	7 52 40.67	66 29 51.20
Div., Flex., etc.	. .	+ 2.34

LALANDE 15551.

	h. m. s.	° ′ ″
Feb. 10 R. 9.1	7 52 45.04	66 35 34.9
Mar. 2 R. 9.1	44.93	35.7
14 R. 9.1	44.90	33.9
Mean . . .	7 52 44.96	66 35 34.83
Div., Flex., etc.	. .	+ 2.33

B. A. C. 2655.

	h. m. s.	° ′ ″
Feb. 1 S.	7 52 58.01	120 1 3.2
15 W.	57.94	2.9
Mean . . .	7 52 57.98	120 1 3.05
Div., Flex., etc.	. .	+ 2.48

O. Arg. N. 8476.

		h. m. s.	° ′ ″
Mar. 25	W.	7 53 16.93	18 27 25.3
29	S.	16.83	26.7
Mean . . .		7 53 16.88	18 27 26.00
Div., Flex., etc.		. .	+ 1.81

O. Arg. N. 8511.

		h. m. s.	° ′ ″
Mar. 25	W.	7 55 44.98	18 23 42.9
29	S.	44.89	44.0
Mean . . .		7 55 44.94	18 23 43.45
Div., Flex., etc.		. .	+ 1.81

Bonn VI, + 23°, 1871.

		h. m. s.	° ′ ″
Mar. 2	R. 9.3	7 55 52.26	66 37 2.1
14	R. 9.5	52.35	2.4
Mean . . .		7 55 52.30	66 37 2.25
Div., Flex., etc.		. .	+ 2.33

D. M. + 23°, 1873.

		h. m. s.	° ′ ″
Mar. 14	R. 9.5	7 56 24.03	66 35 3.4
Div., Flex., etc.		. .	+ 2.33

Taylor 3394.

		h. m. s.	° ′ ″
Feb. 27	R.	7 58 2.58	134 16 22.4
Div., Flex., etc.		. .	+ 1.88

Weisse (2) 1566.

		h. m. s.	° ′ ″
Feb. 3	W.	7 58 38.26	50 38 25.6
Mar. 11	W.	38.30	24.5
Mean . . .		7 58 38.28	50 38 25.05
Div., Flex., etc.		. .	+ 1.74

B. A. C. 2701.

		h. m. s.	° ′ ″
Feb. 23	W.	7 58 41.33	130 58 47.9
Mar. 4	E.	41.40	48.5
13	S.	41.33	47.6
28	E.	41.43	48.6
Mean . . .		7 58 41.37	130 58 48.15
Div., Flex., etc.		. .	+ 2.11

B. A. C. 2712.

		h. m. s.	° ′ ″
Mar. 4	E.	7 59 40.24	122 20 28.1
25	W.	40.21	28.7
29	S.	40.33	28.8
30	R.	40.29	28.3
Mean . . .		7 59 40.27	122 20 28.48
Div., Flex., etc.		. .	+ 2.33

ζ^1 Cancri.

		h. m. s.	° ′ ″
Mar. 26	R.	8 5 . .	71 59 48.8
Nov. 2	W.	26.62	48.9
Mean . . .		8 5 26.62	71 59 48.85
Div., Flex., etc.		. .	+ 2.36

ζ^1 Cancri (Ref.).

		h. m. s.	° ′ ″
Mar. 26	R.	8 5 . .	71 59 53.5
Div., Flex., etc.		. .	— 0.65

ζ^2 Cancri.

		h. m. s.	° ′ ″
Nov. 2	W.	8 5 26.91	71 59 51.2
Div., Flex., etc.		. .	+ 2.36

Brisbane 1936.

		h. m. s.	° ′ ″
Mar. 23	W. 7.0	8 8 52.59	125 59.2

Brisbane 1937.

		h. m. s.	° ′ ″
Mar. 23	W.	8 8 57.02	125 57 16.1
Div., Flex., etc.		. .	+ 2.20

B. A. C. 2774.

		h. m. s.	° ′ ″
Mar. 11	W.	8 9 2.35	125 32 36.5
Div., Flex., etc.		. .	+ 2.22

B. A. C. 2777.

		h. m. s.	° ′ ″
Mar. 14	R. 5.7	8 9 32.46	125 57 52.2
23	W.	32.31	53.5
Mean . . .		8 9 32.38	125 57 52.85
Div., Flex., etc.		. .	+ 2.20

Brisbane 1942.

		h. m. s.	° ′ ″
Mar. 14	R. 6.5	8 9 32.98	125 58 59.5
23	W.	32.96	59 0.4
Mean . . .		8 9 32.97	125 58 59.95
Div., Flex., etc.		. .	+ 2.20

D. M. + 36°, 1782.

		h. m. s.	° ′ ″
Feb. 15	W.	8 9 51.50	53 15 13.5
27	R. 9.3	51.56	13.0
Mar. 2	R. 9.3	51.54	10.0
Mean . . .		8 9 51.53	53 15 12.17
Div., Flex., etc.		. .	+ 2.06

B. A. C. 2780.

		h. m. s.	° ′ ″
Mar. 25	W.	8 9 51.60	129 59 15.8
28	E.	51.51	. .
29	S.	51.65	16.1
Mean . . .		8 9 51.59	129 59 15.95
Div., Flex., etc.		. .	+ 2.17

D. M. + 36°, 1783.

		h. m. s.	° ′ ″
Feb. 15	W.	8 9 53.40	53 15 46.6
27	R. 9.5	53.64	44.7
Mar. 2	R. 9.5	53.53	44.4
Mean . . .		8 9 53.52	53 15 45.23
Div., Flex., etc.		. .	+ 2.06

β Cancri.

		h. m. s.	° ′ ″
Feb. 25	S.	8 10.1	80 27 4.7
Div., Flex., etc.		. .	+ 2.59

β Cancri (Ref.).

		h. m. s.	° ′ ″
Feb. 25	S.	8 10.1	80 27 8.4
Div., Flex., etc.		. .	— 0.79

Anonymous.

		h. m. s.	° ′ ″
Mar. 29	S.	8 11 6.86	47 53 42.1
30	R. 10.2	6.94	38.6
Apr. 1	E. 11.0	6.90	40.1
Mean . . .		8 11 6.90	47 53 40.27
Div., Flex., etc.		. .	+ 1.51

Mer. C. Z. 168, 6.

		h. m. s.	° ′ ″
Feb. 23	W.	8 11 30.70	125 32 28.7
Mar. 28	E.	30.95	27.3
Mean . . .		8 11 30.82	125 32 28.00
Div., Flex., etc.		. .	+ 2.22

M. Z. 232, 21.

		h. m. s.	° ′ ″
Feb. 23	W.	8 11 44.32	125 31 12.5
Mar. 28	E. 8.5	44.43	16.2
Mean . . .		8 11 44.38	125 31 14.35
Div., Flex., etc.		. .	+ 2.22

Anonymous.

		h. m. s.	° ′ ″
Mar. 28	E. 9.4	8 12 43.06	125 33 8.4
Div., Flex., etc.		. .	+ 2.22

Anonymous.

		h. m. s.	° ′ ″
Feb. 10	R. 9.6	8 13 18.13	121 38 52.2
Mar. 4	E. 10.0	18.11	51.3
Mean . . .		8 13 18.12	121 38 51.75
Div., Flex., etc.		. .	+ 2.37

B. A. C. 2795.

		h. m. s.	° ′ ″
Mar. 13	S.	8 14 8.40	126 17 40.0
25	W.	8.36	37.7
31	W.	8.25	37.8
Mean . . .		8 14 8.34	126 17 38.50
Div., Flex., etc.		. .	+ 2.19

O. Arg. N. 8887.

		h. m. s.	° ′ ″
Mar. 29	S.	8 14 50.44	38 56 30.5
Apr. 1	E. 8.5	50.59	27.8
Mean . . .		8 14 50.52	38 56 29.15
Div., Flex., etc.		. .	+ 1.55

B. A. C. 2809.

		h. m. s.	° ′ ″
Feb. 2	R.	8 17 8.04	129 14 43.9
Div., Flex., etc.		. .	+ 2.19

O. Arg. S. 8457.

		h. m. s.	° ′ ″
Feb. 23	W.	8 17 42.12	118 35 40.1
Div., Flex., etc.		. .	+ 2.51

VIII, 3.

		h. m. s.	° ′ ″
Feb. 23	W.	8 18 57.43	118 35 23.0
Div., Flex., etc.		. .	+ 2.51

B. A. C. 2819.

		h. m. s.	° ′ ″
Feb. 15	W.	8 20 . .	28 53 19.6
Mar. 31	W.	26.98	19.4
Apr. 24	W.	27.00	19.2
Mean . . .		8 20 26.99	28 53 19.40
Div., Flex., etc.		. .	+ 1.75

B. A. C. 2819 (Ref.).

		h. m. s.	° ′ ″
Feb. 15	W.	8 20 . .	28 53 20.8
Mar. 31	W.	. .	20.5
Mean . . .		8 20 . .	28 53 20.65
Div., Flex., etc.		. .	+ 0.16

O. Arg. N. 9001.

		h. m. s.	° ′ ″
Feb. 17	S.	8 21 6.66	38 56 36.1
27	R.	6.61	37.1
Mean . . .		8 21 6.64	38 56 36.60
Div., Flex., etc.		. .	+ 1.55

D. M. + 7°, 1981.

		h. m. s.	° ′ ″
Mar. 23	W. 9.0	8 22 2.01	82 49 3.8
25	W. 9.0	1.94	3.0
Nov. 2	W. 8.7	1.83	1.6
Mean . . .		8 22 1.93	82 49 2.80
Div., Flex., etc.		. .	+ 2.56

O. Arg. N. 9029.

		h. m. s.	° ′ ″
Feb. 17	S.	8 23 5.56	38 53 47.6
27	R.	5.40	47.8
Mean . . .		8 23 5.48	38 53 47.70
Div., Flex., etc.		. .	+ 1.55

Anonymous.

		h. m. s.	° ′ ″
Mar. 28	E. 11.5	8 23 10.04	83 1 4.5
30	R. 10.8	10.05	9.1
Mean . . .		8 23 10.04	83 1 6.80
Div., Flex., etc.		. .	+ 2.55

O. Arg. N. 9033.

		h. m. s.	° ′ ″
Feb. 27	R.	8 23 18.68	38 58 38.1
Mar. 4	E.	18.84	39.2
Mean . . .		8 23 18.76	38 58 38.65
Div., Flex., etc.		. .	+ 1.55

O. Arg. N. 9058.

		h. m. s.	° ′ ″
Mar. 2	R.	8 24 17.92	38 56 12.4
4	E.	18.03	13.2
Mean . . .		8 24 17.98	38 56 12.80
Div., Flex., etc.		. .	+ 1.55

Bonn VI, + 51°, 1438.

		h. m. s.	° ′ ″
Mar. 2	R.	8 26 26.69	38 59 57.6
Div., Flex., etc.		. .	+ 1.55

Lacaille, 3373.

		h. m. s.	° ′ ″
Mar. 13	S.	8 26 44.63	128 39 49.4
Div., Flex., etc.		. .	+ 2.18

B. A. C. 2877[1].

		h. m. s.	° ′ ″
Mar. 25	W.	8 27 3.17	128 39 55.1
29	S.	3.20	54.8
31	W. 9.0	2.82	52.5
Mean . . .		8 27 3.06	128 39 54.13
Div., Flex., etc.		. .	+ 2.18

B. A. C. 2877[2].

		h. m. s.	° ′ ″
Mar. 25	W.	8 27 3.35	128 39 57.7
29	S.	3.40	59.4
31	W. 6.0	3.09	57.4
Mean . . .		8 27 3.28	128 39 58.17
Div., Flex., etc.		. .	+ 2.18

Brisbane 2071.

		h. m. s.	° ′ ″
Mar. 13	S.	8 27 35.39	128 39 59.8
25	W.	35.39	58.8
Nov. 2	W.	35.16	58.2
Mean . . .		8 27 35.31	128 39 58.93
Div., Flex., etc.		. .	+ 2.18

O. Arg. N. 9125.

		h. m. s.	° ′ ″
Feb. 17	S.	8 30 13.05	38 55 29.3
27	R. 8.7	13.03	30.2
Mean . . .		8 30 13.04	38 55 29.75
Div., Flex., etc.		. .	+ 1.55

B. A. C. 2901.

		h. m. s.	° ′ ″
Apr. 24	W.	8 31 24.52	83 53 7.0
Div., Flex., etc.		. .	+ 2.52

Weisse (2) 786.

		h. m. s.	° ′ ″
Mar. 28	E.	8 33 5.72	69 1 25.1
Div., Flex., etc.		. .	+ 2.33

Yarnall 3565.

		h. m. s.	° ′ ″
Feb. 23	W. 9.0	8 33 13.87	69 46 36.4
Mar. 2	R. 9.1	13.87	39.0
30	R.	13.85	37.3
Mean . . .		8 33 13.86	69 46 37.57
Div., Flex., etc.		. .	+ 2.33

Yarnall 3576.

		h. m. s.	° ′ ″
Mar. 4	E.	8 33 30.93	69 47 44.3
Div., Flex., etc.		. .	+ 2.33

Yarnall 3586.

		h. m. s.	° ′ ″
Feb. 23	W.	8 33 36.70	69 44 54.6
Mar. 4	E.	36.71	53.5
Nov. 2	W. 7.0	36.64	51.7
Mean . . .		8 33 36.68	69 44 53.27
Div., Flex., etc.		. .	+ 2.33

O. Arg. N. 9210.

		h. m. s.	° ′ ″
Feb. 17	S.	8 33 44.89	38 55 38.2
27	R. 9.0	44.78	39.0
Mean . . .		8 33 44.84	38 35 38.60
Div., Flex., etc.		. .	+ 1.55

γ Cancri.

		h. m. s.	° ′ ″
Feb. 2	R.	8 36 . .	68 6 28.6
6	R.	. .	27.7
Apr. 24	W.	27.39	27.7
Mean . . .		8 36 27.39	68 6 28.00
Div., Flex., etc.		. .	+ 2.33

γ Cancri (Ref.).

		h. m. s.	° ′ ″
Feb. 2	R.	8 36 . .	68 6 30.7
6	R.	. .	29.9
Mean . . .		8 36 . .	68 6 30.30
Div., Flex., etc.		. .	— 0.45

Weisse (2) 974.

		h. m. s.	° ′ ″
Mar. 23	W. 8.5	8 40 2.43	69 44 4.9
Div., Flex., etc.		. .	+ 2.33

O. Arg. S. 8965.

		h. m. s.	° ′ ″
Nov. 2	W. 8.0	8 41 1.24	114 14 48.4
20	W. 8.7	1.10	50.7
22	W. 8.4	1.42	50.9
Mean . . .		8 41 1.25	114 14 50.00
Div., Flex., etc.		. .	+ 2.62

σ Cancri (*med.*).

		h. m. s.	° ′ ″
Apr. 24	W.	8 47 2.53	59 1 0.5
Div., Flex., etc.		. .	+ 2.24

σ[2] Cancri.

		h. m. s.	° ′ ″
Apr. 17	E.	8 47 2.70	58 58 27.2
Div., Flex., etc.			+ 2.24

D. M. + 80°, 281.

		h. m. s.	° ′ ″
Feb. 25	S.	8 50 13.64	9 12 55.5
Mar. 2	R.	14.27	55.3
Mean . . .		8 50 13.96	9 12 55.40
Div., Flex., etc.		. .	+ 1.43

D. M. + 80°, 281, S. P.

		h. m. s.	° ′ ″
Aug. 8	W.	8 50 14.27	350 47 2.1
Sept. 15	W.	14.27	46 58.5
29	W.	13.09	47 2.0
Mean . . .		8 50 13.88	350 47 0.87
Div., Flex., etc.		. .	+ 1.48

O. Arg. N. 9450.

		h. m. s.	° ′ ″
Dec. 7	W.	8 50 17.25	41 29 47.0
Div., Flex., etc.		. .	+ 1.46

B. A. C. 3146.

		h. m. s.	° ′ ″
Feb. 10	R.	9 8 13.56	87 11 16.9
Apr. 17	E.	13.50	16.8
24	W.	13.52	16.6
Nov. 15	W.	13.54	16.7
Mean . . .		9 8 13.53	87 11 16.75
Div., Flex., etc.		. .	+ 2.51

B. A. C. 3162[1].

			h. m. s.	° ′ ″
Apr. 17	E.	9.0	9 11 29.73	52 41 56.2
24	W.		29.58	56.2
Mean . . .			9 11 29.66	52 41 56.20
Div., Flex., etc.			. .	+ 2.02

B. A. C. 3162[2].

			h. m. s.	° ′ ″
Feb. 17	S.		9 11 29.96	52 41 53.9
Apr. 17	E.		29.98	54.6
24	W.		29.92	54.3
Mean . . .			9 11 29.95	52 41 54.27
Div., Flex., etc.			. .	+ 2.02

α Lyncis.

			h. m. s.	° ′ ″
Apr. 25	E.		9 13 51.79	55 6 32.2
Div., Flex., etc.			. .	+ 2.15

Anonymous.

			h. m. s.	° ′ ″
Nov. 22	W.	9.1	9 16 19.41	116 17 54.6
24	W.		19.62	56.8
29	W.		19.72	54.7
Mean . . .			9 16 19.58	116 17 55.37
Div., Flex., etc.			. .	+ 2.58

10 Leonis Minoris.

			h. m. s.	° ′ ″
Apr. 17	E.		9 26 59.59	53 4 44.5
24	W.		59.36	44.1
Mean . . .			9 26 59.48	53 4 44.30
Div., Flex., etc.			. .	+ 2.05

Anonymous.

			h. m. s.	° ′ ″
Feb. 10	R.	10.0	9 29 43.22	78 38 13.9
Div., Flex., etc.			. .	+ 2.56

Anonymous.

			h. m. s.	° ′ ″
Feb. 10	R.	9.5	9 30 22.41	78 34 10.7
Div., Flex., etc.			. .	+ 2.56

B. A. C. 3303.

			h. m. s.	° ′ ″
Apr. 17	E.		9 33 49.78	90 36 25.2
24	W.		49.81	26.7
Mean . . .			9 33 49.80	90 36 25.95
Div., Flex., etc.			. .	+ 2.54

o Leonis.

			h. m. s.	° ′ ″
Feb. 17	S.		9 34 . .	79 34 (12.8)
Mar. 4	E.		. .	15.4
Apr. 18	W.		51.21	15.8
Nov. 18	W.		51.16	13.7
Mean . . .			9 34 51.18	79 34 14.97
Div., Flex., etc.			. .	+ 2.59

o Leonis (Ref.).

			h. m. s.	° ′ ″
Feb. 17	S.		9 34 . .	79 34 (21.6)?
Mar. 4	E.		. .	19.7
Mean . . .			. .	79 34 19.70
Div., Flex., etc.			. .	— 0.78

D. M. + 20°, 2377.

			h. m. s.	° ′ ″
Mar. 28	E.	9.0	9 39 58.62	69 44 36.9
30	R.	9.3	58.65	39.3
Apr. 17	E.		58.56	38.0
18	W.		58.80	39.8
Mean . . .			9 39 58.66	69 44 38.50
Div., Flex., etc.			. .	+ 2.33

Anonymous.

			h. m. s.	° ′ ″
Mar. 30	R.	10.5	9 40 . .	69 44 7.4
Apr. 17	E.		2.53	6.7
18	W.	10.8	2.32	0.6
Mean . . .			9 40 2.42	69 44 4.90
Div., Flex., etc.			. .	+ 2.33

D. M. + 21°, 2106.

			h. m. s.	° ′ ″
Apr. 12	W.		9 40 42.06	68 36 14.3
Div., Flex., etc.			. .	+ 2.33

Anonymous.

			h. m. s.	° ′ ″
Mar. 4	E.		9 42 19.12	123 5 39.3
Div., Flex., etc.			. .	+ 2.30

Weisse 955.

			h. m. s.	° ′ ″
Mar. 4	E.		9 45 28.63	79 37 53.7
28	E.	8.5	28.53	53.1
Mean . . .			9 45 28.58	79 37 53.40
Div., Flex., etc.			. .	+ 2.59

D. M. + 16°, 2042.

			h. m. s.	° ′ ″
Mar. 14	R.	9.8	9 45 56.43	73 55 26.8
Apr. 24	W.	10.0	56.26	29.4
25	E.	10.8	56.27	26.3
Mean . . .			9 45 56.32	73 55 27.50
Div., Flex., etc.			. .	+ 2.39

Bonn VI + 16°, 2047.

			h. m. s.	° ′ ″
Apr. 24	W.	8.7	9 47 29.61	73 59 6.0
25	E.	10.0	29.60	5.8
Mean . . .			9 47 29.60	73 59 5.90
Div., Flex., etc.			. .	+ 2.39

Anonymous.

			h. m. s.	° ′ ″
Nov. 22	W.	8.7	9 52 58.56	110 25 38.2
24	W.	9.0	58.58	40.0
29	W.	9.5	58.69	36.8
Mean . . .			9 52 58.61	110 25 38.33
Div., Flex., etc.			. .	+ 2.66

Anonymous.

			h. m. s.	° ′ ″
Nov. 20	W.	8.8	9 53 45.33	109 36 27.5
Div., Flex., etc.			. .	+ 2.68

B. A. C. 3415.

			h. m. s.	° ′ ″
Mar. 4	E.		9 53 58.69	81 23 21.9
Apr. 12	W.		. .	23.1
Mean . . .			9 53 58.69	81 23 22.50
Div., Flex., etc.			. .	+ 2.58

B. A. C. 3415 (Ref.).

			h. m. s.	° ′ ″
Apr. 12	W.		9 53 . .	81 23 27.1
Div., Flex., etc.			. .	— 0.83

B. A. C. 3453.

			h. m. s.	° ′ ″
Mar. 28	E.		10 0.9 . .	72 39 41.9
29	S.		. .	42.9
Apr. 17	E.		. .	42.5
Mean . . .			. .	72 39 42.43
Div., Flex., etc.			. .	+ 2.37

B. A. C. 3453 (Ref.).

			h. m. s.	° ′ ″
Mar. 28	E.		10 0.9 . .	72 39 46.5
29	S.		. .	47.4
Apr. 17	E.		. .	46.6
Mean . . .			. .	72 39 46.83
Div., Flex., etc.			. .	— 0.67

γ^2 Leonis.

			h. m. s.	° ′ ″
Mar. 28	E.		10 13 28.20	69 33 42.2
Apr. 7	R.	6.5	28.27	43.2
18	W.		28.23	44.1
27	R.		28.18	44.0
Sept. 14	W.		28.11	42.6
19	W.		28.20	42.5
23	W.		28.17	43.1
Mean . . .			10 13 28.19	69 33 43.10
Div., Flex., etc.			. .	+ 2.33

Carrington 1547.

			h. m. s.	° ′ ″
Mar. 4	E.		10 18 40.65	7 47 17.7
28	E.		40.16	16.7
Mean . . .			10 18 40.40	7 47 17.20
Div., Flex., etc.			. .	+ 1.43

Carrington 1547, S. P.

			h. m. s.	° ′ ″
Oct. 30	S.		10 18 40.47	352 12 38.2
Nov. 1	W.		40.59	38.4
6	S.		40.58	37.7
Mean . . .			10 18 40.55	352 12 38.10
Div., Flex., etc.			. .	+ 1.47

μ Hydræ.

			h. m. s.	° ′ ″
Nov. 20	W.		10 20 23.07	106 14 0.1
22	W.		23.04	1.8
Mean . . .			10 20 23.06	106 14 0.95
Div., Flex., etc.			. .	+ 2.58

Weisse 472.

			h. m. s.	° ′ ″
Nov. 24	W.	8.0?	10 28 19.85	100 39 50.3
Div., Flex., etc.			. .	+ 2.40

Weisse 481.

			h. m. s.	° ′ ″
Nov. 24	W.	8.0?	10 28 34.74	100 39 14.3
Div., Flex., etc.			. .	+ 2.40

Lamont 927.

			h. m. s.	° ′ ″
Nov. 29	W.	7.9	10 30 49.77	99 0 17.3
Div., Flex., etc.			. .	+ 2.39

Anonymous.

		h. m. s.	° ′ ″
Mar. 28	E.	10 36 0.57	96 28 17.1
30	R. 10.5	0.44	21.2
Mean . . .		10 36 0.50	96 28 19.15
Div., Flex., etc.		. .	+ 2.38

41 Leonis Minoris.

		h. m. s.	° ′ ″
Apr. 24	W.	10 36 . .	66 11 36.9
May 3	E.	59.95	37.5
Nov. 22	W.	59.95	36.9
Mean . . .		10 36 59.95	66 11 37.10
Div., Flex., etc.		. .	+ 2.34

41 Leonis Minoris (Ref.).

		h. m. s.	° ′ ″
Apr. 24	W.	10 36 . .	66 11 40.7
Div., Flex., etc.		. .	0.38

Anonymous.

		h. m. s.	° ′ ″
Mar. 14	R. 11.0	10 37 9.45	96 24 11.2
28	E.	9.43	6.7
29	S.	9.43	8.6
30	R. 10.2	9.45	11.1
Apr. 11	R. 10.2	9.31	10.7
Mean . . .		10 37 9.41	96 24 9.66
Div., Flex., etc.		. .	+ 2.38

Bonn VI + 11°, 2284.

		h. m. s.	° ′ ″
Mar. 3	W. 10.0	10 43 17.40	78 18 42.0
28	E. 10.0	17.41	40.9
Apr. 11	R. 10.0	17.19	42.3
May 1	R. 9.5	17.26	44.8
Mean . . .		10 43 17.32	78 18 42.50
Div., Flex., etc.		. .	+ 2.55

Anonymous.

		h. m. s.	° ′ ″
Apr. 11	R. 10.5	10 43 38.04	78 17 29.8
May 1	R. 10.0	38.02	33.7
Mean . . .		10 43 38.03	78 17 31.75
Div., Flex., etc.		. .	+ 2.55

D. M. + 11°, 2286.

		h. m. s.	° ′ ″
Mar. 3	W.	10 44 1.99	78 17 36.9
4	E.	2.26	35.0
28	E. 9.5	2.30	35.8
Apr. 11	R. 9.2	1.94	37.0
18	W. 10.0	2.22	39.3
Mean . . .		10 44 2.14	78 17 36.80
Div., Flex., etc.		. .	+ 2.55

46 Leonis Minoris.

		h. m. s.	° ′ ″
May 3	E.	10 46 42.71	55 8.8

Anonymous.

		h. m. s.	° ′ ″
Mar. 28	E. 11.0	10 51 0.57	76 44 44.6
30	R. 10.5	0.16	33.8
Apr. 17	E.	0.48	39.8
Mean . . .		10 51 0.40	76 44 39.40
Div., Flex., etc.		. .	+ 2.47

Anonymous.

		h. m. s.	° ′ ″
Feb. 10	R. 11.3	10 51 37.63	83 44 39.1
Div., Flex., etc.		. .	+ 2.53

ψ Ursæ Majoris.

		h. m. s.	° ′ ″
May 3	E.	11 3 1.74	44 51 40.1
Div., Flex., etc.		. .	+ 1.30

B. A. C. 3838.

		h. m. s.	° ′ ″
Oct. 13	W.	11 8 2.87	73 55 28.7
Div., Flex., etc.		. .	+ 2.39

ν Ursæ Majoris.

		h. m. s.	° ′ ″
Oct. 13	W.	11 12 6.02	56 15 40.1
Div., Flex., etc.		. .	+ 2.19

B. A. C. 3906.

		h. m. s.	° ′ ″
May 1	R.	11 23.6	8 13 23.1
Div., Flex., etc.		. .	+ 1.43

ξ Hydræ.

		h. m. s.	° ′ ″
May 1	R.	11 27 . .	121 12 15.3
3	E.	12.03	15.7
26	W.	11.99	15.6
Mean . . .		11 27 12.01	121 12 15.53
Div., Flex., etc.		. .	+ 2.40

B. A. C. 3981.

		h. m. s.	° ′ ″
Apr. 18	W.	11 39 . .	41 33 56.1
May 26	W.	48.99	57.6
Mean . . .		11 39 48.99	41 33 56.85
Div., Flex., etc.		. .	+ 1.45

B. A. C. 3981 (Ref.).

		h. m. s.	° ′ ″
Apr. 18	W.	11 39 . .	41 33 58.9
Div., Flex., etc.		. .	+ 0.21

π Virginis.

		h. m. s.	° ′ ″
Apr. 18	W.	11 54 49.49	82 43 37.9
May 26	W.	49.60	37.3
June 21	S.	49.55	38.6
Mean . . .		11 54 49.55	82 43 37.93
Div., Flex., etc.		. .	+ 2.56

ε Corvi.

		h. m. s.	° ′ ″
May 1	R.	12 4 3.48	111 57 47.0
26	W.	3.52	46.8
June 21	S.	3.51	46.2
Mean . . .		12 4 3.50	111 57 46.67
Div., Flex., etc.		. .	+ 2.59

B. A. C. 4123.

		h. m. s.	° ′ ″
May 1	R.	12 9 34.88	32 18 39.8
Div., Flex., etc.		. .	+ 1.61

2¹ Canum Venaticorum.

		h. m. s.	° ′ ″
May 26	W.	12 10 11.59	48 40 59.7
Div., Flex., etc.		. .	+ 1.56

2² Canum Venaticorum.

		h. m. s.	° ′ ″
May 26	W.	12 10 12.65	48 40 58.2
Div., Flex., etc.		. .	+ 1.56

B. A. C. 4195.

		h. m. s.	° ′ ″
Apr. 13	R.	12 21.1	61 4 30.3
Div., Flex., etc.		. .	+ 2.28

B. A. C. 4195 (Ref.).

		h. m. s.	° ′ ″
Apr. 13	R.	12 21.1	61 4 32.4
Div., Flex., etc.		. .	— 0.29

γ¹ Virginis.

		h. m. s.	° ′ ″
May 1	R.	12 35 40.80	90 48 2.9
25	R.	40.76	1.9
26	W.	40.73	2.5
Mean . . .		12 35 40.76	90 48 2.43
Div., Flex., etc.		. .	+ 2.52

γ² Virginis.

		h. m. s.	° ′ ″
May 1	R.	12 35 40.97	90 48 7.3
25	R.	40.95	6.8
26	W.	40.93	8.4
Mean . . .		12 35 40.95	90 48 7.50
Div., Flex., etc.		. .	+ 2.52

32¹ Camelopardalis.

		h. m. s.	° ′ ″
May 1	R.	12 48 7.94	5 56 24.6
25	R.	8.28	23.9
Mean . . .		12 48 8.11	5 56 24.25
Div., Flex., etc.		. .	+ 1.37

32¹ Camelopardalis, S. P.

		h. m. s.	° ′ ″
Nov. 25	W.	12 48 9.99	354 3 32.7
Div., Flex., etc.		. .	+ 1.43

α¹ Canum Venaticorum.

		h. m. s.	° ′ ″
Apr. 7	R. 7.0	12 50 29.14	51 2 49.4
May 25	R.	29.19	49.9
June 7	W.	29.21	50.8
8	E.	29.16	50.5
Nov. 18	W.	28.95	50.5
Mean . . .		12 50 29.13	51 2 50.22
Div., Flex., etc.		. .	+ 1.80

B. A. C. 4367.

		h. m. s.	° ′ ″
Apr. 17	E.	12 56 18.07	78 24 20.0
Div., Flex., etc.		. .	+ 2.55

θ¹ Virginis.

		h. m. s.	° ′ ″
May 26	W.	13 3 50.31	94 54 21.9
June 2	R. 8.3	50.34	22.2
7	W.	50.28	21.4
8	E.	50.33	20.8
Mean . . .		13 3 50.32	94 54 21.58
Div., Flex., etc.		. .	+ 2.32

20 Canum Venaticorum.

	h. m. s.	° ′ ″
June 21 S.	13 12 15.07	48 48 19.5
Div., Flex., etc.	. . .	+ 1.56

m Virginis.

	h. m. s.	° ′ ″
May 26 W.	13 35 25.19	98 6 23.3
Div., Flex., etc.	. .	+ 2.41

B. A. C. 4643.

	h. m. s.	° ′ ″
June 2 R.	13 45.7	6 39 19.7
Div., Flex., etc.	. .	+ 1.41

B. A. C. 4643 (Ref.).

	h. m. s.	° ′ ″
June 2 R.	13 45 . .	6 39 19.8
Div., Flex., etc.	. .	+ 0.17

Anonymous.

	h. m. s.	° ′ ″
May 23 E.	13 51 0.96	103 1 30.1
25 R 9.5	1.00	31.7
26 W. 10.0	0.95	31.6
June 6 R. 9.5	0.92	32.1
Mean . . .	13 51 0.96	103 1 31.38
Div., Flex., etc.	. .	+ 2.42

Anonymous.

	h. m. s.	° ′ ″
May 26 W. 9.5	13 51 28.14	102 58 28.6
Div., Flex., etc.	. .	+ 2.42

Anonymous.

	h. m. s.	° ′ ″
May 23 E.	13 51 47.72	102 57 13.3
25 R. 9.8	47.57	13.9
June 6 R. 10.0	47.62	11.6
Mean . . .	13 51 47.64	102 57 12.93
Div., Flex., etc.	. .	+ 2.42

B. A. C. 4672.

	h. m. s.	° ′ ″
May 2 W.	13 55 38.62	87 52 59.1
18 W.	38.51	59.2
Mean . . .	13 55 38.56	87 52 59.15
Div., Flex., etc.	. .	+ 2.54

d Bootis.

	h. m. s.	° ′ ″
May 2 R.	14 5.0	64 20 52.5
26 W.	. .	53.1
June 6 R.	. .	52.9
21 S.	. .	52.8
Mean . . .	. .	64 20 52.82
Div., Flex., etc.	. .	+ 2.37

d Bootis (Ref.).

	h. m. s.	° ′ ″
May 1 R.	14 5.0	64 20 55.7
26 W.	. .	56.1
June 6 R.	. .	55.5
21 S.	. .	55.4
Mean . . .	. .	64 20 55.68
Div., Flex., etc.	. .	— 0.35

λ Bootis.

	h. m. s.	° ′ ″
May 26 W.	14 11 54.00	43 22 8.8
Nov. 23 W.	54.00	8.1
26 W.	53.96	9.3
Mean . . .	14 11 53.99	43 22 8.73
Div., Flex., etc.	. .	+ 1.34

λ Virginis.

	h. m. s.	° ′ ″
June 7 W.	14 12 43.56	102 49 . .

Anonymous.

	h. m. s.	° ′ ″
May 2 W.	14 15 56.49	105 0 29.8
23 E.	56.24	26.6
25 R.	56.10	23.9
Mean . . .	14 15 56.28	105 0 26.77
Div., Flex., etc.	. .	+ 2.48

B. A. C. 4769.

	h. m. s.	° ′ ″
May 2 W.	14 18 8.16	83 38 30.3
18 W.	8.19	25.9
23 E.	8.25	25.6
25 R.	8.08	24.8
Mean . . .	14 18 8.17	83 38 26.65
Div., Flex., etc.	. .	+ 2.53

B. A. C. 4773.

	h. m. s.	° ′ ″
May 2 W.	14 18 19.02	83 38 36.1
18 W.	19.00	36.1
23 E.	19.11	35.3
25 R.	18.88	35.3
Mean . . .	14 18 19.00	83 38 35.70
Div., Flex., etc.	. .	+ 2.53

33 Bootis.

	h. m. s.	° ′ ″
May 3 E.	14 34 26.91	45 5 5.7
26 W.	26.89	6.0
29 R.	26.87	6.8
Mean . . .	14 34 26.89	45 5 6.17
Div., Flex., etc.	. .	+ 1.31

a^1 Libræ.

	h. m. s.	° ′ ″
May 26 W.	14 44 9.45	105 30 17.5
29 R.	9.69	19.0
June 6 R. 5.5	9.67	20.2
Mean . . .	14 44 9.60	105 30 18.90
Div., Flex., etc.	. .	+ 2.52

Lalande (F.) 2545.

	h. m. s.	° ′ ″
May 2 W. 6.0	14 52 28.23	39 53 18.0
18 W.	28.26	17.5
23 E.	28.26	16.6
29 R.	28.15	17.2
Mean . . .	14 52 28.22	39 53 17.32
Div., Flex., etc.	. .	+ 1.54

B. A. C. 4982.

	h. m. s.	° ′ ″
May 3 E.	14 58 22.79	7 0 14.0
18 W.	23.35	15.1
June 6 R.	22.70	15.4
Mean . . .	14 58 22.95	7 0 14.83
Div., Flex., etc.	. .	+ 1.43

B. A. C. 4980.

	h. m. s.	° ′ ″
May 3 E.	15 1 31.54	41 23 31.9
June 2 R.	31.52	31.5
19 W.	31.42	31.0
Mean . . .	15 1 31.49	41 23 31.47
Div., Flex., etc.	. .	+ 1.47

δ Bootis.

	h. m. s.	° ′ ″
May 26 W.	15 10 44.70	56 14 37.4
June 2 R. 4.5	44.78	37.9
6 R. 3.0	44.86	38.9
Mean . . .	15 10 44.78	56 14 38.07
Div., Flex., etc.	. .	+ 2.19

Weisse (2) 213.

	h. m. s.	° ′ ″
May 26 W. 7.5	15 10 52.97	56 14 16.2
June 2 R. 8.5	53.07	16.6
6 R. 8.0	53.04	18.1
Mean . . .	15 10 53.03	56 14 16.97
Div., Flex., etc.	. .	+ 2.19

μ^2 Bootis.

	h. m. s.	° ′ ″
June 2 R.	15 20 3.32	52 14 16.1
22 R. 6.8	3.35	15.1
Mean . . .	15 20 3.34	52 14 15.60
Div., Flex., etc.	. .	+ 1.98

β Coronæ Borealis.

	h. m. s.	° ′ ″
May 26 W.	15 22 . .	60 29 10.8
June 2 R.	57.89	10.1
6 R.	57.84	11.2
7 W.	. .	11.0
Mean . . .	15 22 57.86	60 29 10.78
Div., Flex., etc.	. .	+ 2.27

β Coronæ Borealis (Ref.).

	h. m. s.	° ′ ″
May 26 W.	15 22 . .	60 29 12.4
June 7 W.	. .	14.4
Mean . . .	. .	13.40
Div., Flex., etc.	. .	— 0.24

M. Z. 259, 15.

	h. m. s.	° ′ ″
July 6 E.	15 31 24.82	110 37 27.8
10 E. 6.0	24.78	28.8
15 S. 6.0	24.70	29.0
Mean . . .	15 31 24.77	110 37 28.53
Div., Flex., etc.	. .	+ 2.65

B. A. C. 5216.

	h. m. s.	° ′ ″
June 23 W.	15 40 44.65	74 12 27.1
Div., Flex., etc.	. .	+ 2.39

B. A. C. 5230.

	h. m. s.	° ′ ″
May 26 W.	15 43 27.81	93 4 2.7
June 6 R.	27.81	4.3
July 5 W.	27.71	1.1
Mean . . .	15 43 27.78	93 4 2.70
Div., Flex., etc.	. .	+ 2.36

B. A. C. 5284.

		h. m. s.	° ′ ″
July 5	W.	15 51 0.15	73 57 5.8
Div., Flex., etc.		. .	+ 2.39

β^3 Scorpii.

		h. m. s.	° ′ ″
May 29	R.	15 58 35.05	109 28 36.1
June 2	R.	35.02	37.2
6	R. 6.7	35.03	38.5
22	R. 7.3	35.12	37.9
July 24	R.	35.00	35.5
Mean . . .		15 58 35.04	109 28 37.04
Div., Flex., etc.		. .	+ 2.68

B. A. C. 5348.

		h. m. s.	° ′ ″
June 23	W.	15 59 40.94	31 7 7.4
July 5	W.	40.94	6.2
6	E.	40.86	6.8
10	E.	40.90	6.6
Mean . . .		15 59 40.91	31 7 6.75
Div., Flex., etc.		. .	+ 1.67

B. A. C. 5348 (Ref.).

		h. m. s.	° ′ ″
July 6	E.	15 59 . .	31 7 8.8
10	E.	. .	8.8
Mean . . .		. .	8.80
Div., Flex., etc.		. .	+ 0.18

B. A. C. 5358.

		h. m. s.	° ′ ″
May 25	R.	16 2 18.83	123 13 49.9
29	R.	18.85	48.9
Mean . . .		16 2 18.84	123 13 49.40
Div., Flex., etc.		. .	+ 2.30

B. A. C. 5363.

		h. m. s.	° ′ ″
May 2	W.	16 3 15.23	130 48 21.3
June 2	R.	15.20	19.8
6	R.	15.28	19.6
Mean . . .		16 3 15.24	130 48 20.23
Div., Flex., etc.		. .	+ 2.12

ϕ Herculis.

		h. m. s.	° ′ ″
June 23	W.	16 5 3.28	44 45 16.8
July 5	W.	3.24	16.8
10	E.	3.30	17.4
15	S.	. .	16.9
Mean . . .		16 5 3.27	44 45 16.98
Div., Flex., etc.		. .	+ 1.30

ϕ Herculis (Ref.).

		h. m. s.	° ′ ″
July 15	S.	16 5 . .	44 45 18.7
Div., Flex., etc.		. .	+ 0.25

Radcliffe 3513.

		h. m. s.	° ′ ″
May 25	R. 6.8	16 6 44.18	31 45 13.1
29	R.	44.32	14.6
June 2	R.	44.19	11.4
22	R. 7.0	44.25	15.8
July 6	E.	44.30	13.9
Mean . . .		16 6 44.25	31 45 13.76
Div., Flex., etc.		. .	+ 1.64

σ^1 Coronæ Borealis.

		h. m. s.	° ′ ″
July 10	E. 8.0	16 10 15.49	55 50 31.5
24	R. 7.0	15.53	31.0
Mean . . .		16 10 15.51	55 50 31.25
Div., Flex., etc.		. .	+ 2.18

σ Coronæ Borealis (*med.*).

		h. m. s.	° ′ ″
June 19	W.	16 10 15.44	55 50 30.8
Div., Flex., etc.		. .	+ 2.18

σ^2 Coronæ Borealis.

		h. m. s.	° ′ ″
July 10	E. 7.0	16 10 15.75	55 50 27.9
24	R. 6.0	15.75	26.9
Mean . . .		16 10 15.75	55 50 27.40
Div., Flex., etc.		. .	+ 2.18

B. A. C. 5437.

		h. m. s.	° ′ ″
June 6	R.	16 12 4.70	94 24.2

Gould Z. C. 1157.

		h. m. s.	° ′ ″
July 10	E.	16 16 59.00	130 22 8.4
24	R.	58.93	5.8
Mean . . .		16 16 58.96	130 22 7.10
Div., Flex., etc.		. .	+ 2.15

B. A. C. 5468.

		h. m. s.	° ′ ″
May 2	W.	16 17 35.12	121 8 47.8
25	R.	35.04	45.8
29	R.	34.95	45.7
Mean . . .		16 17 35.04	121 8 46.43
Div., Flex., etc.		. .	+ 2.40

Gould Z. C. 1206.

		h. m. s.	° ′ ″
June 6	R. 9.5	16 17 39.88	130 24 18.1
July 10	E.	39.70	23.2
24	R.	39.71	19.8
Mean . . .		16 17 39.76	130 24 20.37
Div., Flex., etc.		. .	+ 2.15

Gould Z. C. 1244.

		h. m. s.	° ′ ″
July 6	E.	16 18 10.27	130 25 14.0
10	E.	10.19	17.2
24	R.	10.30	(9.7)
Mean . . .		16 18 10.25	130 25 15.60
Div., Flex., etc.		. .	+ 2.15

B. A. C. 5471.

		h. m. s.	° ′ ″
June 13	S.	16 18 10.65	121 25 44.8
19	W.	10.45	45.9
21	S.	10.50	46.2
Mean . . .		16 18 10.53	121 25 45.63
Div., Flex., etc.		. .	+ 2.38

B. A. C. 5506.

		h. m. s.	° ′ ″
May 2	W.	16 23 29.60	124 4 26.1
Div., Flex., etc.		. .	+ 2.28

B. A. C. 5508.

		h. m. s.	° ′ ″
May 25	R.	16 23 40.50	124 26 43.4
29	R.	40.39	43.6
June 2	R.	40.37	43.8
Mean . . .		16 23 40.42	124 26 43.60
Div., Flex., etc.		. .	+ 2.27

Lalande 30024[1].

		h. m. s.	° ′ ″
June 19	W.	16 23 41.11	71 20 12.2
21	S.	41.22	11.2
Mean . . .		16 23 41.16	71 20 11.70
Div., Flex., etc.		. .	+ 2.35

Lalande 30024 (*med.*).

		h. m. s.	° ′ ″
June 6	R.	16 23 41.28	71 20 12.6
Div., Flex., etc.		. .	+ 2.35

Lalande 30024[2].

		h. m. s.	° ′ ″
June 19	W.	16 23 41.33	71 20 12.6
21	S.	41.46	11.9
Mean . . .		16 23 41.40	71 20 12.25
Div., Flex., etc.		. .	+ 2.35

B. A. C. 5538.

		h. m. s.	° ′ ″
May 2	W.	16 28 36.88	125 0 39.0
Div., Flex., etc.		. .	+ 2.25

Anonymous.

		h. m. s.	° ′ ″
May 25	R. 11.4	16 30 18.33	106 28 3.8
29	R. 11.4	18.18	2.6
June 6	R.	18.29	3.2
Mean . . .		16 30 18.27	106 28 3.20
Div., Flex., etc.		. .	+ 2.60

B. A. C. 5557.

		h. m. s.	° ′ ″
June 2	R.	16 31 51.98	120 13 40.7
13	S.	52.18	40.3
22	R.	52.01	40.8
July 1	W.	52.03	40.4
Mean . . .		16 31 52.05	120 13 40.55
Div., Flex., etc.		. .	+ 2.47

B. A. C. 5568.

		h. m. s.	° ′ ″
June 19	W.	16 32 44.64	43 8 49.1
Div., Flex., etc.		. .	+ 1.35

17^1 Draconis.

		h. m. s.	° ′ ″
July 5	W.	16 33 26.66	36 50 15.4
Div., Flex., etc.		. .	+ 1.50

17^2 Draconis.

		h. m. s.	° ′ ″
July 5	W.	16 33 27.10	36 50 17.1
Div., Flex., etc.		. .	+ 1.50

Lalande 30353.

		h. m. s.	° ′ ″
May 2	W.	16 33 48.01	46 11 58.6
June 21	S.	48.10	56.7
Mean . . .		16 33 48.06	46 11 57.65
Div., Flex., etc.		. .	+ 1.40

B. A. C. 5589.

		h. m. s.	° ′ ″
June 13	S.	16 36 1.97	121 0 2.7
22	R.	1.91	3.0
July 1	W.	1.90	2.4
Mean . . .		16 36 1.93	121 0 2.70
Div., Flex., etc.		. .	+ 2.41

B. A. C. 5593.

		h. m. s.	° ′ ″
May 25	R.	16 36 32.31	130 36 54.9
Div., Flex., etc.		. .	+ 2.13

ANONYMOUS.

		h. m. s.	° ′ ″
June 6	R. 9.6	16 36 45.85	103 54 52.4
July 6	E.	45.98	55.3
10	E. 10.0	45.96	54.5
24	R. 9.6	45.88	51.6
Mean . . .		16 36 45.92	103 54 53.45
Div., Flex., etc.		. .	+ 2.42

ANONYMOUS.

		h. m. s.	° ′ ″
July 6	E.	16 37 8.85	103 55 35.6
10	E. 8.0	8.91	33.0
24	R. 8.7	8.94	36.1
Mean . . .		16 37 8.90	103 55 34.90
Div., Flex., etc.		. .	+ 2.42

B. A. C. 5619.

		h. m. s.	° ′ ″
June 19	W.	16 39 30.40	55 44 32.6
21	S.	30.56	32.4
July 1	W.	30.58	32.5
Mean . . .		16 39 30.51	55 44 32.50
Div., Flex., etc.		. .	+ 2.18

B. A. C. 5629.

		h. m. s.	° ′ ″
July 5	W.	16 40 33.95	34 5 31.5
10	E.	33.92	31.6
Mean . . .		16 40 33.94	34 5 31.55
Div., Flex., etc.		. .	+ 1.58

B. A. C. 5632.

		h. m. s.	° ′ ″
June 13	S.	16 42 31.31	124 4 36.8
22	R.	31.29	37.2
Mean . . .		16 42 31.30	124 4 37.00
Div., Flex., etc.		. .	+ 2.28

B. A. C. 5635.

		h. m. s.	° ′ ″
June 19	W.	16 43 20.24	131 1 32.7
July 5	W.	20.03	32.3
6	E.	20.22	32.0
Mean . . .		16 43 20.16	131 1 32.33
Div., Flex., etc.		. .	+ 2.11

H. IV, 50.

		h. m. s.	° ′ ″
July 10	E.	16 43 40.40	42 15 43.9
Div., Flex., etc.		. .	+ 1.41

B. A. C. 5638.

		h. m. s.	° ′ ″
June 2	R.	16 43 52.72	127 50 35.0
Div., Flex., etc.		. .	+ 2.16

B. A. C. 5639.

		h. m. s.	° ′ ″
June 13	S.	16 44 16.18	130 31 11.1
July 11	S.	16.15	12.5
15	S.	16.08	12.3
Mean . . .		16 44 16.14	130 31 11.97
Div., Flex., etc.		. .	+ 2.14

B. A. C. 5640.

		h. m. s.	° ′ ″
June 2	R.	16 44 20.74	127 48 51.5
Div., Flex., etc.		. .	+ 2.16

B. A. C. 5653.

		h. m. s.	° ′ ″
July 5	W.	16 45 30.66	121 40 44.2
10	E.	30.75	47.7
24	R.	30.75	47.0
Mean . . .		16 45 30.72	121 40 46.30
Div., Flex., etc.		. .	+ 2.36

B. A. C. 5665.

		h. m. s.	° ′ ″
July 1	W.	16 46 34.56	120 33 19.3
6	E.	34.73	19.1
25	W.	34.56	19.2
Mean . . .		16 46 34.62	120 33 19.20
Div., Flex., etc.		. .	+ 2.44

STONE 9178.

		h. m. s.	° ′ ″
July 1	W.	16 46 55.23	120 31 24.1
6	E.	55.34	22.8
25	W.	55.18	22.9
Mean . . .		16 46 55.25	120 31 23.27
Div., Flex., etc.		. .	+ 2.45

LALANDE 30694.

		h. m. s.	° ′ ″
Aug. 4	E.	16 47 2.01	89 46 46.6
10	W.	1.99	47.4
Mean . . .		16 47 2.00	89 46 47.00
Div., Flex., etc.		. .	+ 2.58

B. A. C. 5671.

		h. m. s.	° ′ ″
June 22	R. 6.7	16 47 4.33	120 23 28.4
Div., Flex., etc.		. .	+ 2.45

B. A. C. 5675.

		h. m. s.	° ′ ″
June 6	R. 8.5	16 47 31.42	129 18 41.9
Div., Flex., etc.		. .	+ 2.18

PIAZZI 218.

		h. m. s.	° ′ ″
July 10	E.	16 48 23.27	130 37 58.4
15	S.	23.34	56.1
24	R.	23.29	56.8
Mean . . .		16 48 23.30	130 37 57.10
Div., Flex., etc.		. .	+ 2.13

B. A. C. 5694.

		h. m. s.	° ′ ″
July 25	W.	16 49 19.97	122 8 47.9
Aug. 4	E.	20.00	47.7
Mean . . .		16 49 19.98	122 8 47.80
Div., Flex., etc.		. .	+ 2.34

B. A. C. 5696.

		h. m. s.	° ′ ″
June 19	W.	16 49 29.76	123 4 14.0
July 5	W.	29.67	12.5
6	E.	29.79	12.6
Mean . . .		16 49 29.74	123 4 13.03
Div., Flex., etc.		. .	+ 2.30

WEISSE (2) 1513.

		h. m. s.	° ′ ″
Aug. 10	W.	16 49 50.12	68 51 1.5
Div., Flex., etc.		. .	+ 2.33

PIAZZI 244.

		h. m. s.	° ′ ″
July 6	E.	16 51 59.01	104 41 6.4
10	E. 6.5	58.93	10.5
Mean . . .		16 51 58.97	104 41 8.45
Div., Flex., etc.		. .	+ 2.46

WEISSE 958.

		h. m. s.	° ′ ″
May 2	W.	16 52 5.24	94 9 30.9
Div., Flex., etc.		. .	+ 2.32

ANONYMOUS.

		h. m. s.	° ′ ″
July 10	E. 10.8	16 53 21.95	104 39 30.3
Div., Flex., etc.		. .	+ 2.46

B. A. C. 5718.

		h. m. s.	° ′ ″
June 2	R.	16 54 14.84	121 57 59.0
6	R. 5.5	14.91	59.4
21	S.	14.81	58.2
22	R.	14.73	59.1
Mean . . .		16 54 14.82	121 57 58.92
Div., Flex., etc.		. .	+ 2.34

B. A. C. 5721.

		h. m. s.	° ′ ″
June 2	R.	16 54 49.15	122 5 0.8
6	R. 7.3	49.26	5 0.3
21	S.	49.29	4 59.1
22	R.	49.09	5 1.0
Mean . . .		16 54 49.20	122 5 0.30
Div., Flex., etc.		. .	+ 2.34

XVI, 23.

		h. m. s.	° ′ ″
July 11	S. 8.0	16 54 58.15	126 41 17.0
Div., Flex., etc.		. .	+ 2.17

B. A. C. 5734.

		h. m. s.	° ′ ″
July 1	W.	16 55 10.29	27 26 53.8
Div., Flex., etc.		. .	+ 1.77

Stone 9266.

		h. m. s.	° ′ ″
July 24	R.	16 55 41.85	121 26 32.2
25	W.	41.90	32.0
Mean . . .		16 55 41.88	121 26 32.10
Div., Flex., etc.		. .	+ 2.38

B. A. C. 5729.

		h. m. s.	° ′ ″
July 6	E.	16 55 56.14	127 40 25.8
10	E.	55.97	27.8
15	S.	56.07	24.2
Mean . . .		16 55 56.06	127 40 25.93
Div., Flex., etc.		. .	+ 2.16

B. A. C. 5735.

		h. m. s.	° ′ ″
June 29	S.	16 57 3.71	123 57 18.8
July 5	W.	3.61	16.9
15	S.	3.57	16.5
Mean . . .		16 57 3.63	123 57 17.40
Div., Flex., etc.		. .	+ 2.28

B. A. C. 5753.

		h. m. s.	° ′ ″
May 2	W.	16 58 13.83	76 13 31.8
July 1	W.	13.88	32.0
Mean . . .		16 58 13.86	76 13 31.90
Div., Flex., etc.		. .	+ 2.45

B. A. C. 5757.

		h. m. s.	° ′ ″
May 2	W.	16 58 32.24	76 15 40.4
July 1	W.	32.19	39.8
Mean . . .		16 58 32.22	76 15 40.10
Div., Flex., etc.		. .	+ 2.45

Gould Z. C. 4182.

		h. m. s.	° ′ ″
July 24	R. 8.7	16 58 59.92	113 49 54.0
Div., Flex., etc.		. .	+ 2.61

Weisse (2) 1790.

		h. m. s.	° ′ ″
June 19	W.	16 59 33.22	70 14 10.2
22	R.	33.15	10.5
July 5	W.	33.21	8.5
Mean . . .		16 59 33.19	70 14 9.73
Div., Flex., etc.		. .	+ 2.33

B. A. C. 5762.

		h. m. s.	° ′ ″
June 2	R.	17 0 9.35	120 55 0.2
July 6	E.	9.45	54 59.8
10	E.	9.34	55 0.5
Mean . . .		17 0 9.38	120 55 0.17
Div., Flex., etc.		. .	+ 2.42

Weisse (2) 1844.

		h. m. s.	° ′ ″
July 6	E.	17 1 18.56	67 45 16.0
10	E.	18.54	16.3
11	S.	18.51	16.2
Mean . . .		17 1 18.54	67 45 16.17
Div., Flex., etc.		. .	+ 2.33

O. Arg. N. 16802[1].

		h. m. s.	° ′ ″
July 25	W.	17 1 42.46	30 15 32.3
Div., Flex., etc.		. .	+ 1.72

O. Arg. N. 16802[2].

		h. m. s.	° ′ ″
July 25	W.	17 1 43.64	30 15 24.9
Div., Flex., etc.		. .	+ 1.72

η Ophiuchi.

		h. m. s.	° ′ ″
June 6	R. 2.5	17 3 36.70	105 34 36.8
29	S.	36.71	36.1
July 5	W.	36.72	34.3
Nov. 3	W.	36.72	37.2
Mean . . .		17 3 36.71	105 34 36.10
Div., Flex., etc.		. .	+ 2.53

B. A. C. 5782.

		h. m. s.	° ′ ″
May 2	W.	17 4 7.49	129 21 23.6
June 2	R.	7.15	25.4
Mean . . .		17 4 7.32	129 21 24.50
Div., Flex., etc.		. .	+ 2.18

B. A. C. 5793.

		h. m. s.	° ′ ″
June 13	S.	17 5 18.41	122 17 36.2
19	W.	18.40	34.8
22	R.	18.29	38.1
Mean . . .		17 5 18.37	122 17 36.37
Div., Flex., etc.		. .	+ 2.33

Anonymous[2].

		h. m. s.	° ′ ″
July 6	E.	17 6 28.46	113 21 28.6
Div., Flex., etc.		. .	+ 2.60

B. A. C. 5804.

		h. m. s.	° ′ ″
July 1	W.	17 7 34.57	123 24 34.8
5	W.	34.53	34.7
6	E.	34.59	34.0
Mean . . .		17 7 34.56	123 24 34.50
Div., Flex., etc.		. .	+ 2.29

Lalande 31378.

		h. m. s.	° ′ ″
July 24	R.	17 7 48.67	37 26 46.6
25	W.	48.57	43.9
Mean . . .		17 7 48.62	37 26 45.25
Div., Flex., etc.		. .	+ 1.50

B. A. C. 5807.

		h. m. s.	° ′ ″
July 10	E.	17 8 5.29	123 35 58.9
11	S.	5.37	59.6
15	S.	5.22	59.0
Mean . . .		17 8 5.29	123 35 59.17
Div., Flex., etc.		. .	+ 2.29

B. A. C. 5818.

		h. m. s.	° ′ ″
July 5	W.	17 9 21.37	120 13 0.8
10	E.	21.45	2.4
15	S.	21.50	0.8
Mean . . .		17 9 21.44	120 13 1.33
Div., Flex., etc.		. .	+ 2.47

B. A. C. 5817.

		h. m. s.	° ′ ″
May 2	W.	17 9 23.19	122 31 39.4
6	R. 5.7	23.13	40.4
Mean . . .		17 9 23.16	122 31 39.90
Div., Flex., etc.		. .	+ 2.32

Weisse 143.

		h. m. s.	° ′ ″
June 22	R.	17 10 32.51	88 39 20.9
July 11	S.	32.52	21.5
24	R.	32.49	21.7
Mean . . .		17 10 32.51	88 39 21.37
Div., Flex., etc.		. .	+ 2.56

B. A. C. 5824.

		h. m. s.	° ′ ″
May 2	W.	17 10 39.41	122 25 20.7
June 6	R. 6.8	39.41	23.3
Mean . . .		17 10 39.41	122 25 22.00
Div., Flex., etc.		. .	+ 2.32

Weisse (2) 308.

		h. m. s.	° ′ ″
July 1	W.	17 12 50.58	72 33 14.0
5	W.	50.61	14.3
6	E.	50.66	15.1
Mean . . .		17 12 50.62	72 33 14.47
Div., Flex., etc.		. .	+ 2.37

Bonn VI + 53°, 1937.

		h. m. s.	° ′ ″
June 29	S.	17 19 12.38	36 28 0.3
July 5	W.	12.48	27 58.9
10	E.	12.46	28 0.4
Mean . . .		17 19 12.44	36 27 59.87
Div., Flex., etc.		. .	+ 1.51

Weisse (2) 516.

		h. m. s.	° ′ ″
June 6	R.	17 19 14.43	73 35 19.0
22	R.	14.43	19.2
Mean . . .		17 19 14.43	73 35 19.10
Div., Flex., etc.		. .	+ 2.38

B. A. C. 5893.

		h. m. s.	° ′ ″
July 25	W.	17 20 39.65	85 45 18.6
Div., Flex., etc.		. .	+ 2.50

B. A. C. 5893 (Ref.).

		h. m. s.	° ′ ″
July 25	W.	17 20 . .	85 45 20.6
Div., Flex., etc.		. .	− 0.81

B. A. C. 5891.

		h. m. s.	° ′ ″
July 1	W.	17 20 57.11	126 40 39.0
5	W.	56.92	38.2
6	E.	57.18	38.5
Mean . . .		17 20 57.07	126 40 38.57
Div., Flex., etc.		. .	+ 2.17

ANONYMOUS.

		h. m. s.	° ′ ″
July 6	E. 10.0	17 22 8.05	121 3 9.0
24	R. 10.2	7.97	6.0
Mean . . .		17 22 8.01	121 3 7.50
Div., Flex., etc.		. .	+ 2.41

D. M. — 0°, 3298.

		h. m. s.	° ′ ″
June 6	R. 7.5	17 23 59.98	90 56 36.1
22	R. 8.0	24 0.08	33.9
July 10	E.	23 59.79	34.9
Mean . . .		17 23 59.95	90 56 34.97
Div., Flex., etc.		. .	+ 2.52

B. A. C. 5910.

		h. m. s.	° ′ ″
June 6	R. 5.0	17 24 19.34	90 57 46.7
22	R. 5.0	19.26	47.3
July 10	E.	19.39	47.9
Mean . . .		17 24 19.33	90 57 47.30
Div., Flex., etc.		. .	+ 2.52

TAYLOR 8095.

		h. m. s.	° ′ ″
June 19	W.	17 24 48.47	131 5 2.5
29	S.	48.23	2.9
July 5	W.	48.15	0.3
Mean . . .		17 24 48.28	131 5 1.90
Div., Flex., etc.		. .	+ 2.10

B. A. C. 5914.

		h. m. s.	° ′ ″
July 6	E.	17 25 21.83	122 58 8.8
11	S.	21.80	8.4
15	S.	21.64	6.6
Mean . . .		17 25 21.76	122 58 7.93
Div., Flex., etc.		. .	+ 2.30

B. A. C. 5925.

		h. m. s.	° ′ ″
July 1	W.	17 26 59.93	122 29 51.4
5	W.	26 59.84	50.4
6	E.	27 0.04	51.7
Mean . . .		17 26 59.94	122 29 51.17
Div., Flex., etc.		. .	+ 2.32

WEISSE (2) 813.

		h. m. s.	° ′ ″
July 10	E.	17 28 15.16	70 39 22.7
11	S.	15.12	21.7
15	S.	15.17	22.3
Mean . . .		17 28 15.15	70 39 22.23
Div., Flex., etc.		. .	+ 2.34

LALANDE 32014.

		h. m. s.	° ′ ″
July 24	R.	17 28 22.72	73 35 48.9
25	W.	22.62	49.4
Aug. 4	E.	22.72	48.6
11	E.	22.64	49.4
Mean . . .		17 28 22.68	73 35 49.08
Div., Flex., etc.		. .	+ 2.39

B. A. C. 5950.

		h. m. s.	° ′ ″
June 22	R.	17 29 51.27	34 44 3.0
July 5	W.	51.29	3.5
Mean . . .		17 29 51.28	34 44 3.25
Div., Flex., etc.		. .	+ 1.57

B. A. C. 5951.

		h. m. s.	° ′ ″
June 22	R.	17 29 56.68	34 44 44.3
July 5	W.	56.79	44.5
Mean . . .		17 29 56.74	34 44 44.40
Div., Flex., etc.		. .	+ 1.57

B. A. C. 5972.

		h. m. s.	° ′ ″
July 1	W.	17 32 26.66	21 47 21.5
15	S.	26.13	20.0
25	W	26.38	21.2
Mean . . .		17 32 26.39	21 47 20.90
Div., Flex., etc.		. .	+ 1.77

B. A. C. 5970.

		h. m. s.	° ′ ″
July 5	W.	17 34 19.54	128 57 58.9
6	E.	19.52	58 1.0
10	E.	19.55	3.4
Mean . . .		17 34 19.54	128 58 1.10
Div., Flex., etc.		. .	+ 2.19

B. A. C. 5974.

		h. m. s.	° ′ ″
June 6	R. 5.5	17 34 50.38	126 53 3.1
Div., Flex., etc.		. .	+ 2.16

B. A. C. 5980.

		h. m. s.	° ′ ″
July 10	E.	17 35 51.94	122 36 15.9
15	S.	51.98	14.0
24	R.	51.88	12.4
Mean . . .		17 35 51.93	122 36 14.10
Div., Flex., etc.		. .	+ 2.32

B. A. C. 5983.

		h. m. s.	° ′ ″
Aug. 4	E.	17 35 56.33	120 7.1

ι HERCULIS.

		h. m. s.	° ′ ″
Nov. 3	W.	17 36 8.30	43 55 48.6
15	W.	8.14	47.5
Mean . . .		17 36 8.22	43 55 48.05
Div., Flex., etc.		. .	+ 1.31

B. A. C. 5991.

		h. m. s.	° ′ ″
July 25	W.	17 36 40.87	73 59 29.4
Aug. 10	W.	40.84	29.7
Mean . . .		17 36 40.86	73 59 29.55
Div., Flex., etc.		. .	+ 2.39

BONN VI + 14°, 3321.

		h. m. s.	° ′ ″
June 22	R. 6.3	17 37 59.41	75 38 59.3
July 1	W.	59.42	58.6
5	W.	59.41	59.5
Mean . . .		17 37 59.41	75 38 59.13
Div., Flex., etc.		. .	+ 2.42

LALANDE 32455.

		h. m. s.	° ′ ″
Aug. 4	E.	17 38 39.70	38 7 25.7
11	E.	39.57	26.1
Mean . . .		17 38 39.64	38 7 25.90
Div., Flex., etc.		. .	+ 1.51

LALANDE 32408.

		h. m. s.	° ′ ″
June 22	R. 5.8	17 38 54.93	75 32 14.3
July 1	W.	54.93	13.8
5	W.	54.92	13.6
Mean . . .		17 38 54.93	75 32 13.90
Div., Flex., etc.		. .	+ 2.42

B. A. C. 6004.

		h. m. s.	° ′ ″
July 6	E.	17 39 19.98	130 4 46.3
10	E.	19.96	46.3
15	S.	19.88	43.4
Mean . . .		17 39 19.94	130 4 45.33
Div., Flex., etc.		. .	+ 2.17

O. ARG. N. 17464.

		h. m. s.	° ′ ″
July 25	W.	17 39 23.26	17 28 54.9
Aug. 10	W.	23.37	54.9
Sept. 19	S.	23.25	53.4
Mean . . .		17 39 23.29	17 28 54.40
Div., Flex., etc.		. .	+ 1.78

XVII, 17.

		h. m. s.	° ′ ″
July 24	R. 6.2	17 40 37.90	112 25 52.3
Div., Flex., etc.		. .	+ 2.59

B. A. C. 6016.

		h. m. s.	° ′ ″
July 5	W.	17 41 30.56	121 39 36.9
Div., Flex., etc.		. .	+ 2.37

B. A. C. 6019.

		h. m. s.	° ′ ″
July 6	E.	17 41 55.99	130 3 1.2
10	E.	55.93	1.1
15	S.	55.92	0.3
Mean . . .		17 41 55.95	130 3 0.87
Div., Flex., etc.		. .	+ 2.17

WEISSE (2) 1334.

		h. m. s.	° ′ ″
July 11	S.	17 41 57.95	51 4 16.3
Div., Flex., etc.		. .	+ 1.81

BONN VI + 20°, 3570.

		h. m. s.	° ′ ″
July 25	W.	17 43 20.98	69 23 36.1
Div., Flex., etc.		. .	+ 2.33

ψ² DRACONIS, S. P.

		h. m. s.	° ′ ″
Feb. 26	E.	17 44 4.43	342 12 50.9
Div., Flex., etc.		. .	+ 1.19

B. A. C. 6029.

		h. m. s.	° ′ ″
July 5	W.	17 44 21.33	124 45 53.7
Div., Flex., etc.		. .	+ 2.26

B. A. C. 6031.

		h. m. s.	° ′ ″
July 6	E.	17 44 29.21	124 22 58.3
10	E.	29.24	23 0.8
15	S.	29.13	22 56.8
Mean . . .		17 44 29.19	124 22 58.63
Div., Flex., etc.		. .	+ 2.27

B. A. C. 6032.

		h. m. s.	° ′ ″
July 24	R.	17 44 38.71	121 17 39.3
Div., Flex., etc.		. .	+ 2.39

B. A. C. 6037.

		h. m. s.	° ′ ″
July 5	W.	17 45 27.57	124 41 57.4
Div., Flex., etc.		. .	+ 2.26

WEISSE (2) 1438.

		h. m. s.	° ′ ″
June 27	W.	17 45 48.48	60 38 42.4
July 11	S.	48.34	41.9
Aug. 10	W.	48.49	41.7
Mean . . .		17 45 48.44	60 38 42.00
Div., Flex., etc.		. .	+ 2.28

O. ARG. S. 17316.

		h. m. s.	° ′ ″
Aug. 11	E.	17 46 12.46	118 58 58.3
Div., Flex., etc.		. .	+ 2.50

B. A. C. 6046.

		h. m. s.	° ′ ″
July 6	E.	17 46 36.35	124 26 19.7
10	E.	36.26	23.3
15	S.	36.32	19.2
Mean . . .		17 46 36.31	124 26 20.73
Div., Flex., etc.		. .	+ 2.27

WEISSE 912.

		h. m. s.	° ′ ″
July 1	W.	17 46 36.60	88 39 49.9
25	W.	36.68	50.4
Aug. 25	W.	36.60	51.4
Mean . . .		17 46 36.63	88 39 50.57
Div., Flex., etc.		. .	+ 2.56

LALANDE 32707.

		h. m. s.	° ′ ″
June 29	S.	17 47 29.37	83 52 21.4
Div., Flex., etc.		. .	+ 2.52

B. A. C. 6057.

		h. m. s.	° ′ ″
July 5	W.	17 48 32.94	122 27 8.9
15	S.	33.21	8.3
24	R.	33.00	8.1
Mean . . .		17 48 33.05	122 27 8.43
Div., Flex., etc.		. .	+ 2.32

B. A. C. 6058.

		h. m. s.	° ′ ″
July 10	E.	17 49 6.22	122 40 6.9
11	S.	6.09	5.5
25	W.	6.26	4.9
Mean . . .		17 49 6.19	122 40 5.77
Div., Flex., etc.		. .	+ 2.31

WEISSE (2) 1591.

		h. m. s.	° ′ ″
July 5	W.	17 50 53.40	67 30 57.4
Div., Flex., etc.		. .	+ 2.33

M. Z. 27. 51.

		h. m. s.	° ′ ″
Aug. 11	E.	17 51 28.23	118 53 13.4
Div., Flex., etc.		. .	+ 2.50

LACAILLE 7520.

		h. m. s.	° ′ ″
June 22	R.	17 52 7.10	129 14 6.6
Div., Flex., etc.		. .	+ 2.19

B. A. C. 6076.

		h. m. s.	° ′ ″
July 1	W.	17 52 9.69	123 23 44.1
6	E.	9.80	46.6
10	E.	9.73	47.5
Mean . . .		17 52 9.74	123 23 46.07
Div., Flex., etc.		. .	+ 2.29

B. A. C. 6095.

		h. m. s.	° ′ ″
July 5	W.	17 54 23.29	46 34 18.2
10	E.	23.44	17.4
11	S.	23.27	16.3
Mean . . .		17 54 23.33	46 34 17.30
Div., Flex., etc.		. .	+ 1.43

WEISSE (2) 1764.

		h. m. s.	° ′ ″
June 22	R.	17 56 17.02	56 46 49.8
27	W.	17.05	52.5
July 6	E.	17.07	48.9
Mean . . .		17 56 17.05	56 46 50.40
Div., Flex., etc.		. .	+ 2.21

WEISSE (2) 1797.

		h. m. s.	° ′ ″
June 22	R.	17 57 16.61	56 41 15.9
27	W.	16.57	15.5
July 6	E.	16.81	14.4
Mean . . .		17 57 16.66	56 41 15.27
Div., Flex., etc.		. .	+ 2.20

B. A. C. 6131.

		h. m. s.	° ′ ″
July 6	E. 8.0	18 1 21.15	121 10 26.2
10	E. 8.0	21.02	26.5
Mean . . .		18 1 21.08	121 10 26.35
Div., Flex., etc.		. .	+ 2.40

WEISSE (2) 1941.

		h. m. s.	° ′ ″
July 5	W.	18 1 26.26	57 46 42.3
15	S.	26.21	43.0
Mean . . .		18 1 26.24	57 46 42.65
Div., Flex., etc.		. .	+ 2.23

B. A. C. 6139.

		h. m. s.	° ′ ″
July 25	W.	18 2 16.01	122 43 54.3
28	R.	16.05	54.8
Mean . . .		18 2 16.03	122 43 54.55
Div., Flex., etc.		. .	+ 2.31

B. A. C. 6144.

		h. m. s.	° ′ ″
July 6	E.	18 2 21.13	122 9 38.1
10	E.	21.08	. .
Aug. 11	E.	21.26	39.9
Mean . . .		18 2 21.16	122 9 39.00
Div., Flex., etc.		. .	+ 2.33

B. A. C. 6145[1].

		h. m. s.	° ′ ″
Sept. 19	S.	18 2 29.25	120 44 44.8
Div., Flex., etc.		. .	+ 2.43

B. A. C. 6150.

		h. m. s.	° ′ ″
July 11	S.	18 2.9	61 15 7.5
24	R.	. .	7.7
Mean . . .		. .	61 15 7.60
Div., Flex., etc.		. .	+ 2.28

B. A. C. 6150 (Ref.).

		h. m. s.	° ′ ″
July 11	S.	18 2.9	61 15 10.2
24	R.	. .	10.3
Mean . . .		. .	61 15 10.25
Div., Flex., etc.		. .	— 0.30

WEISSE (2) 44.

		h. m. s.	° ′ ″
June 22	R. 7.5	18 2 59.79	53 35 36.7
27	W.	59.67	. .
July 15	S.	59.72	34.9
Mean . . .		18 2 59.73	53 35 35.80
Div., Flex., etc.		. .	+ 2.08

WEISSE (2) 76.

		h. m. s.	° ′ ″
June 22	R. 5.5	18 3 56.79	53 36 33.3
27	W.	56.52	35.6
July 15	S.	56.79	33.5
Mean . . .		18 3 56.70	53 36 34.13
Div., Flex., etc.		. .	+ 2.08

WEISSE 46.

		h. m. s.	° ′ ″
July 25	W.	18 4 46.62	86 41 48.9
Aug. 10	W.	46.62	50.2
28	W.	46.52	49.5
Mean . . .		18 4 46.59	86 41 49.53
Div., Flex., etc.		. .	+ 2.50

LALANDE 33412.

		h. m. s.	° ′ ″
Aug. 11	E.	18 4 52.61	73 32 38.8
Sept. 5	W.	52.69	39.0
Mean . . .		18 4 52.65	73 32 38.90
Div., Flex., etc.		. .	+ 2.38

WEISSE (2) 137.

		h. m. s.	° ′ ″
June 22	R. 6.3	18 5 52.54	53 33 22.0
27	W.	52.65	25.0
July 15	S.	52.65	22.6
Mean . . .		18 5 52.61	53 33 23.20
Div., Flex., etc.		. .	+ 2.08

B. A. C. 6166.

	h. m. s.	° ′ ″
July 10 E.	18 5 56.25	121 59 41.2
Div., Flex., etc.	. .	+ 2.34

B. A. C. 6174.

	h. m. s.	° ′ ″
July 25 W.	18 7 51.28	126 36 28.6
Div., Flex., etc.	. .	+ 2.18

B. A. C. 6181.

	h. m. s.	° ′ ″
July 6 E.	18 8 32.85	121 11 38.4
Aug. 11 E.	32.91	37.8
Mean . . .	18 8 32.88	121 11 38.10
Div., Flex., etc.	. .	+ 2.40

B. A. C. 6182.

	h. m. s.	° ′ ″
July 10 E.	18 8 40.10	121 21 22.2
11 S.	40.15	18.5
15 S.	40.19	21.1
Mean . . .	18 8 40.15	121 21 20.60
Div., Flex., etc.	. .	+ 2.39

B. A. C. 6188.

	h. m. s.	° ′ ″
July 10 E.	18 9 37.51	121 20 8.6
11 S.	37.68	3.6
15 S.	37.63	6.3
Mean . . .	18 9 37.61	121 20 6.17
Div., Flex., etc.	. .	+ 2.39

B. A. C. 6186.

	h. m. s.	° ′ ″
Aug. 16 E.	18 9 38.61	126 47 41.4
Div., Flex., etc.	. .	+ 2.17

B. A. C. 6192.

	h. m. s.	° ′ ″
July 25 W.	18 10 4.49	123 26 7.9
Aug. 28 W.	4.35	8.4
Mean . . .	18 10 4.42	123 26 8.15
Div., Flex., etc.	. .	+ 2.29

XVIII, 8.

	h. m. s.	° ′ ″
July 10 E. 8.2	18 12 11.26	130 19 10.0
Div., Flex., etc.	. .	+ 2.15

XVIII, 9.

	h. m. s.	° ′ ″
July 11 S. 7.5	18 12 44.51	113 21 40.3
Div., Flex., etc.	. .	+ 2.60

B. A. C. 6204.

	h. m. s.	° ′ ″
July 25 W.	18 13 9.49	123 22 23.6
Aug. 28 W.	. .	22.5
Mean . . .	18 13 9.49	123 22 23.05
Div., Flex., etc.	. .	+ 2.29

ANONYMOUS.

	h. m. s.	° ′ ″
July 6 E.	18 13 39.16	106 14 54.7
Div., Flex., etc.	. .	+ 2.58

B. A. C. 6211.

	h. m. s.	° ′ ″
July 15 S.	18 13 39.35	120 59 24.1
Div., Flex., etc.	. .	+ 2.41

ANONYMOUS.

	h. m. s.	° ′ ″
July 6 E.	18 13 47.11	106 13 42.8
Div., Flex., etc.	. .	+ 2.58

B. A. C. 6221.

	h. m. s.	° ′ ″
Aug. 16 E.	18 14 53.42	126 43 21.6
Div., Flex., etc.	. .	+ 2.17

ANONYMOUS.

	h. m. s.	° ′ ″
July 10 E. 9.5	18 15 6.28	107 14 8.9
Div., Flex., etc.	. .	+ 2.65

B. A. C. 6231.

	h. m. s.	° ′ ″
July 15 S.	18 15 18.47	68 5 13.3
Aug. 10 W.	18.34	14.6
28 W.	18.14	11.3
Mean . . .	18 15 18.32	68 5 13.07
Div., Flex., etc.	. .	+ 2.33

B. A. C. 6226.

	h. m. s.	° ′ ″
July 11 S.	18 15 30.82	126 17 36.7
Aug. 29 W.	30.82	36.7
Mean . . .	18 15 30.82	126 17 36.70
Div., Flex., etc.	. .	+ 2.19

XVIII, 10.

	h. m. s.	° ′ ″
Aug. 11 E.	18 16 1.72	117 33 30.0
Div., Flex., etc.	. .	+ 2.54

LALANDE 33895.

	h. m. s.	° ′ ″
July 25 W.	18 17 5.97	78 1 36.2
Aug. 17 W.	5.96	35.7
Sept. 1 W.	5.89	37.0
Mean . . .	18 17 5.94	78 1 36.30
Div., Flex., etc.	. .	+ 2.53

B. A. C. 6239.

	h. m. s.	° ′ ″
July 6 E.	18 17 26.37	120 48 52.0
Div., Flex., etc.	. .	+ 2.42

B. A. C. 6252.

	h. m. s.	° ′ ″
Aug. 14 W.	18 18 9.90	40 19 52.2
Div., Flex., etc.	. .	+ 1.52

B. A. C. 6244.

	h. m. s.	° ′ ″
July 10 E.	18 18 14.76	121 49 2.7
11 S.	14.77	2.6
15 S.	14.74	1.5
Mean . . .	18 18 14.76	121 49 2.27
Div., Flex., etc.	. .	+ 2.35

B. A. C. 6249.

	h. m. s.	° ′ ″
July 28 R. 6.7	18 19 5.93	120 27 23.7
Aug. 16 E.	6.04	22.1
29 W.	5.94	23.1
Mean . . .	18 19 5.97	120 27 22.97
Div., Flex., etc.	. .	+ 2.45

B. A. C. 6254.

	h. m. s.	° ′ ″
July 6 E.	18 19 45.29	123 28 42.5
10 E.	45.21	42.5
Mean . . .	18 19 45.25	123 28 42.50
Div., Flex., etc.	. .	+ 2.29

B. A. C. 6256.

	h. m. s.	° ′ ″
July 25 W.	18 19 56.54	121 35 55.1
Div., Flex., etc.	. .	+ 2.37

B. A. C. 6259.

	h. m. s.	° ′ ″
July 15 S.	18 20 17.21	129 3 49.8
Aug. 20 W.	17.32	48.5
Sept. 18 W.	17.32	50.9
Mean . . .	18 20 17.28	129 3 49.73
Div., Flex., etc.	. .	+ 2.19

GOULD Z. C. 1243.

	h. m. s.	° ′ ″
July 25 W.	18 20 24.57	121 38 9.0
Div., Flex., etc.	. .	+ 2.37

B. A. C. 6288.

	h. m. s.	° ′ ″
June 27 W.	18 20 56.49	18 32 27.2
Div., Flex., etc.	. .	+ 1.81

O. ARG. S. 18261.

	h. m. s.	° ′ ″
Aug. 11 E. 8.6	18 21 36.07	116 39 55.0
Div., Flex., etc.	. .	+ 2.57

O. ARG. S. 18262.

	h. m. s.	° ′ ″
Aug. 11 E. 7.5	18 21 36.21	116 39 12.8
Div., Flex., etc.	. .	+ 2.57

GOULD Z. C. 1335.

	h. m. s.	° ′ ″
July 6 E. 8.5	18 21 56.05	123 34 53.2
Div., Flex., etc.	. .	+ 2.29

B. A. C. 6289.

	h. m. s.	° ′ ″
July 5 W.	18 22 11.35	31 16 1.2
Div., Flex., etc.	. .	+ 1.66

B. A. C. 6289 (Ref.).

	h. m. s.	° ′ ″
July 5 W.	18 22 . .	31 16 1.3
Div., Flex., etc.	. .	+ 0.18

B. A. C. 6274.

	h. m. s.	° ′ ″
July 10 E.	18 22 15.47	123 34 11.8
Div., Flex., etc.	. .	+ 2.29

B. A. C. 6275.

	h. m. s.	° ′ ″
July 11 S.	18 22 16.72	123 7 17.3
Div., Flex., etc.	. .	+ 2.30

B. A. C. 6302.

		h. m. s.	° ′ ″
July 15	S.	18 23 10.97	17 19 3.9
Nov. 3	W.	11.25	5.5
15	W.	11.16	5.1
Mean . . .		18 23 11.13	17 19 4.83
Div., Flex., etc.		. .	+ 1.77

B. A. C. 6285.

		h. m. s.	° ′ ″
July 11	S.	18 23 20.32	123 3 52.6
Div., Flex., etc.		. .	+ 2.30

PIAZZI 87.

		h. m. s.	° ′ ″
July 11	S.	18 24 39.26	123 1 11.2
Div., Flex., etc.		. .	+ 2.30

WEISSE (2) 703.

		h. m. s.	° ′ ″
July 15	S. 7.0	18 25 49.51	73 9 3.7
25	W.	49.54	4.3
28	R.	49.52	5.2
Mean . . .		18 25 49.52	73 9 4.40
Div., Flex., etc.		. .	+ 2.37

B. A. C. 6305.

		h. m. s.	° ′ ″
July 11	S.	18 26 13.25	123 6 7.0
Div., Flex., etc.		. .	+ 2.30

B. A. C. 6308.

		h. m. s.	° ′ ″
July 11	S.	18 26 20.77	123 2 50.2
Div., Flex., etc.		. .	+ 2.30

ANONYMOUS.

		h. m. s.	° ′ ″
July 6	E. 10.8	18 26 28.08	127 58 23.3
10	E.	28.09	27.3
Aug. 16	E. 11.0	28.28	18.3
Mean . . .		18 26 28.15	127 58 22.97
Div., Flex., etc.		. .	+ 2.16

TR. Z. 47, 24.

		h. m. s.	° ′ ″
July 6	E. 8.0	18 27 18.58	127 59 48.3
10	E.	18.59	50.2
16	E. 8.0	18.75	46.3
Mean . . .		18 27 18.64	127 59 48.27
Div., Flex., etc.		. .	+ 2.16

B. A. C. 6317.

		h. m. s.	° ′ ″
July 11	S.	18 27 42.59	122 58 48.7
Div., Flex., etc.		. .	+ 2.30

ANONYMOUS.

		h. m. s.	° ′ ″
July 6	E. 10.0	18 27 49.06	127 58 31.3
10	E.	49.06	35.2
Mean . . .		18 27 49.06	127 58 33.25
Div., Flex., etc.		. .	+ 2.16

WEISSE (2) 794.

		h. m. s.	° ′ ″
July 24	R.	18 28 19.34	59 31 59.0
Div., Flex., etc.		. .	+ 2.26

B. A. C. 6334.

		h. m. s.	° ′ ″
Aug. 11	E.	18 30 36.96	122 46 47.2
29	W.	36.82	45.9
Sept. 18	W.	36.94	48.7
Mean . . .		18 30 36.91	122 46 47.27
Div., Flex., etc.		. .	+ 2.31

WEISSE 710.

		h. m. s.	° ′ ″
July 5	W.	18 30 50.07	80 58 7.3
15	S.	50.18	7.0
25	W.	50.08	6.6
Mean . . .		18 30 50.11	80 58 6.97
Div., Flex., etc.		. .	+ 2.58

LALANDE 34486.

		h. m. s.	° ′ ″
Sept. 1	W.	18 30 54.76	83 25 9.7
Div., Flex., etc.		. .	+ 2.54

LALANDE 34499.

		h. m. s.	° ′ ″
July 25	W.	18 31 32.20	90 24 23.7
Aug. 10	W.	32.22	25.1
28	W.	32.17	24.0
Mean . . .		18 31 32.20	90 24 24.27
Div., Flex., etc.		. .	+ 2.55

B. A. C. 6344.

		h. m. s.	° ′ ″
July 11	S.	18 31 46.26	123 5 43.2
Div., Flex., etc.		. .	+ 2.30

WEISSE (2) 934.

		h. m. s.	° ′ ″
Aug. 16	E.	18 32 17.64	56 37 43.1
Sept. 5	W.	17.73	43.8
18	W.	17.71	44.9
Mean . . .		18 32 17.69	56 37 43.93
Div., Flex., etc.		. .	+ 2.20

M. Z. 45, 21.

		h. m. s.	° ′ ″
July 24	R. 9.5	18 33 10.24	117 38 46.1
Aug. 11	E.	10.42	46.9
Mean . . .		18 33 10.33	117 38 46.50
Div., Flex., etc.		. .	+ 2.54

O. ARG. S. 18537.

		h. m. s.	° ′ ″
Aug. 11	E.	18 34 23.95	117 33 10.5
Div., Flex., etc.		. .	+ 2.54

B. A. C. 6375.

		h. m. s.	° ′ ″
Aug. 29	W.	18 35 26.71	12 32 44.1
Sept. 1	W.	26.80	43.8
Mean . . .		18 35 26.76	12 32 43.95
Div., Flex., etc.		. .	+ 1.49

B. A. C. 6359.

		h. m. s.	° ′ ″
July 5	W.	18 35 41.21	128 26 5.0
10	E.	41.28	8.3
Mean . . .		18 35 41.24	128 26 6.65
Div., Flex., etc.		. .	+ 2.17

B. A. C. 6364.

		h. m. s.	° ′ ″
July 11	S.	18 35 44.74	49 10 18.6
15	S.	44.97	19.1
25	W.	44.92	18.8
Mean . . .		18 35 44.88	49 10 18.83
Div., Flex., etc.		. .	+ 1.59

O. ARG. S. 18605.

		h. m. s.	° ′ ″
July 28	R. 7.5	18 37 25.00	115 29 6.8
Aug. 28	W.	24.72	7.4
Mean . . .		18 37 24.86	115 29 7.10
Div., Flex., etc.		. .	+ 2.61

B. A. C. 6417.

		h. m. s.	° ′ ″
July 5	W.	18 38 53.05	6 43 11.9
11	S.	52.14	12.8
Mean . . .		18 38 52.60	6 43 12.35
Div., Flex., etc.		. .	+ 1.41

ANONYMOUS.

		h. m. s.	° ′ ″
Aug. 29	W.	18 40 22.49	35 15 55.6
Div., Flex., etc.		. .	+ 1.55

WEISSE (2) 1218.

		h. m. s.	° ′ ″
Sept. 19	S.	18 41 19.28	63 27 44.9
Div., Flex., etc.		. .	+ 2.36

B. A. C. 6389.

		h. m. s.	° ′ ″
July 6	E.	18 41 20.97	122 50 20.0
24	R.	20.84	18.9
Aug. 20	W.	20.93	19.0
Mean . . .		18 41 20.91	122 50 19.30
Div., Flex., etc.		. .	+ 2.31

O. ARG. N. 18618.

		h. m. s.	° ′ ″
July 5	W.	18 42 32.50	35 13 37.8
Aug. 29	W.	32.47	37.2
Sept. 5	W.	32.52	37.4
Mean . . .		18 42 32.50	35 13 37.47
Div., Flex., etc.		. .	+ 1.55

LAMONT 77.

		h. m. s.	° ′ ″
Aug. 28	W.	18 42 54.76	118 44 24.0
Div., Flex., etc.		. .	+ 2.51

WEISSE (2) 1314.

		h. m. s.	° ′ ″
July 25	W.	18 44 23.55	65 5 9.5
Div., Flex., etc.		. .	+ 2.37

B. A. C. 6414.

		h. m. s.	° ′ ″
July 5	W.	18 45 7.03	120 52 20.0
Sept. 19	S.	7.16	20.6
Mean . . .		18 45 7.10	120 52 20.30
Div., Flex., etc.		. .	+ 2.42

LALANDE 35150.

		h. m. s.	° ′ ″
Oct. 3	S.	18 46 37.31	76 10 26.6
7	S.	37.27	26.9
Mean . . .		18 46 37.29	76 10 26.75
Div., Flex., etc.		. .	+ 2.45

B. A. C. 6438.

		h. m. s.	° ′ ″
Aug. 10	W.	18 47.2	68 42 56.5
Div., Flex., etc.		. .	+ 2.33

B. A. C. 6438 (Ref.).

		h. m. s.	° ′ ″
Aug. 10	W.	18 47.2	68 43 0.1
Div., Flex., etc.		. .	− 0.48

B. A. C. 6435.

		h. m. s.	° ′ ″
July 5	W.	18 47 22.88	127 31 57.9
10	E.	23.00	57.5
25	W.	23.01	57.8
Mean . . .		18 47 22.96	127 31 57.73
Div., Flex., etc.		. .	+ 2.16

B. A. C. 6444.

		h. m. s.	° ′ ″
July 5	W.	18 48 40.21	127 29 31.0
10	E.	40.23	32.7
25	W.	40.36	31.4
Mean . . .		18 48 40.27	127 29 31.70
Div., Flex., etc.		. .	+ 2.16

ANONYMOUS.

		h. m. s.	° ′ ″
July 6	E. 10.0	18 49 13.43	118 57 13.2
11	S. 10.0	13.27	12.7
Mean . . .		18 49 13.35	118 57 12.95
Div., Flex., etc.		. .	+ 2.50

B. A. C. 6470.

		h. m. s.	° ′ ″
Sept. 5	W.	18 50 18.26	39 26 17.3
Div., Flex., etc.		. .	+ 1.55

B. A. C. 6455.

		h. m. s.	° ′ ″
Aug. 11	E.	18 50 32.12	120 58 42.1
29	W.	31.89	41.2
Sept. 1	W.	31.86	41.6
Mean . . .		18 50 31.96	120 58 41.63
Div., Flex., etc.		. .	+ 2.41

B. A. C. 6458.

		h. m. s.	° ′ ″
July 10	E.	18 50 45.76	127 15 34.0
Sept. 15	W.	45.70	33.6
18	W.	45.77	32.6
Mean . . .		18 50 45.74	127 15 33.40
Div., Flex., etc.		. .	+ 2.16

B. A. C. 6459.

		h. m. s.	° ′ ″
Aug. 16	E.	18 50 46.58	121 11 20.3
28	W.	46.53	19.5
Mean . . .		18 50 46.56	121 11 19.90
Div., Flex., etc.		. .	+ 2.40

M. Z. 47, 23.

		h. m. s.	° ′ ″
July 6	E. 9.0	18 50 46.87	118 54 25.8
11	S.	46.93	24.7
Mean . . .		18 50 46.90	118 54 25.25
Div., Flex., etc.		. .	+ 2.50

WEISSE (2) 1528.

		h. m. s.	° ′ ″
Sept. 19	S.	18 50 53.88	72 2 27.0
Oct. 5	E.	53.75	26.1
6	W.	53.78	26.3
Mean . . .		18 50 53.80	72 2 26.47
Div., Flex., etc.		. .	+ 2.36

B. A. C. 6491.

		h. m. s.	° ′ ″
Feb. 10	W.	18 54 31.77	57 28 16.2
14	W.	31.69	14.9
Mean . . .		18 54 31.73	57 28 15.55
Div., Flex., etc.		. .	+ 2.22

O. ARG. N. 18836.

		h. m. s.	° ′ ″
July 5	W.	18 55 54.37	24 53 59.7
11	S.	54.16	54 0.1
25	W.	54.21	0.9
Mean . . .		18 55 54.25	24 54 0.23
Div., Flex., etc.		. .	+ 1.83

D. M. + 20°, 4021.

		h. m. s.	° ′ ″
July 6	E. 8.5	18 56 13.38	69 20 14.4
24	R. 9.3	13.54	13.9
28	R. 8.5	13.44	13.2
Mean . . .		18 56 13.45	69 20 13.83
Div., Flex., etc.		. .	+ 2.33

BONN VI + 20°, 4022.

		h. m. s.	° ′ ″
June 16	W.	18 56 17.55	69 19 59.1
July 6	E. 6.0	17.66	58.7
24	R.	17.62	59.8
28	R. 6.3	17.52	59.5
Mean . . .		18 56 17.59	69 19 59.28
Div., Flex., etc.		. .	+ 2.33

B. A. C. 6499.

		h. m. s.	° ′ ″
Aug. 16	E.	18 56 50.46	121 13 4.1
28	W.	50.29	4.6
Mean . . .		18 56 50.38	121 13 4.35
Div., Flex., etc.		. .	+ 2.40

LALANDE 35560.

		h. m. s.	° ′ ″
Sept. 19	S.	18 56 52.34	88 23 48.9
Oct. 3	S.	52.27	48.5
4	W.	52.27	48.5
Mean . . .		18 56 52.29	88 23 48.63
Div., Flex., etc.		. .	+ 2.56

O. ARG. N. 18838.

		h. m. s.	° ′ ″
July 25	W.	18 57 15.69	39 37 58.9
Aug. 29	W.	15.71	58.5
Sept. 1	W.	15.66	58.6
Mean . . .		18 57 15.69	39 37 58.67
Div., Flex., etc.		. .	+ 1.54

LALANDE 35598.

		h. m. s.	° ′ ″
Sept. 29	W.	18 57 34.04	88 20 59.2
Oct. 4	W. 5.5	34.00	21 0.2
Mean . . .		18 57 34.02	88 20 59.70
Div., Flex., etc.		. .	+ 2.55

WEISSE (2) 1757.

		h. m. s.	° ′ ″
July 5	W.	18 57 44.06	70 30 33.2
Aug. 17	W.	43.95	33.2
20	W.	44.08	32.2
Mean . . .		18 57 44.03	70 30 32.87
Div., Flex., etc.		. .	+ 2.34

B. A. C. 6520.

		h. m. s.	° ′ ″
July 11	S.	18 58 5.99	43 13 53.6
25	W.	6.13	54.5
Mean . . .		18 58 6.06	43 13 54.05
Div., Flex., etc.		. .	+ 1.34

B. A. C. 6522.

		h. m. s.	° ′ ″
Oct. 5	E.	18 58 23.41	34 30.7

B. A. C. 6511.

		h. m. s.	° ′ ″
July 6	E.	18 58 26.46	127 13 52.4
10	E.	26.36	52.7
Sept. 15	W.	26.31	50.5
18	W.	26.43	51.9
Oct. 6	W.	26.38	50.9
7	S.	26.36	52.8
Mean . . .		18 58 26.38	127 13 51.87
Div., Flex., etc.		. .	+ 2.16

B. A. C. 6530.

		h. m. s.	° ′ ″
June 16	W.	18 59 20.68	37 54 35.1
July 5	W.	20.62	35.5
Sept. 1	W.	20.56	34.6
Mean . . .		18 59 20.62	37 54 35.07
Div., Flex., etc.		. .	+ 1.51

B. A. C. 6535.

		h. m. s.	° ′ ″
July 11	S.	19 1 26.67	128 5 10.6
Aug. 29	W.	26.64	9.2
Sept. 1	W.	26.48	9.8
Mean . . .		19 1 26.60	128 5 9.87
Div., Flex., etc.		. .	+ 2.16

B. A. C. 6541.

		h. m. s.	° ′ ″
July 5	W.	19 1 54.57	129 31 34.7
28	R.	54.82	35.3
Aug. 28	W.	54.65	33.9
Mean . . .		19 1 54.68	129 31 34.63
Div., Flex., etc.		. .	+ 2.18

LALANDE 36268[a].

		h. m. s	° ′ ″
June 16	W.	19 11 2.57	75 39 46.5
July 24	R. 5.8	2.60	46.5
Sept. 19	S.	2.69	45.0
Mean . . .		19 11 2.62	75 39 46.00
Div., Flex., etc.		. .	+ 2.42

B. A. C. 6603.

		h. m. s.	° ′ ″
July 25	W.	19 12 14.64	40 8 12.8
Aug. 29	W.	14.73	12.5
Sept. 1	W.	14.71	11.7
Mean . . .		19 12 14.69	40 8 12.33
Div., Flex., etc.		. .	+ 1.53

B. A. C. 6599.

		h. m. s.	° ′ ″
July 5	W.	19 12 16.52	52 4 30.8
Sept. 15	W.	16.34	29.9
18	W.	16.50	31.1
Mean . . .		19 12 16.45	52 4 30.60
Div., Flex., etc.		. .	+ 1.97

B. A. C. 6594.

		h. m. s.	° ′ ″
July 6	E.	19 12 50.79	122 1 59.6
10	E.	50.78	59.8
Mean . . .		19 12 50.78	122 1 59.70
Div., Flex., etc.		. .	+ 2.34

LALANDE 36409.

		h. m. s.	° ′ ″
July 11	S.	19 13 18.18	51 5 22.3
Div., Flex., etc.		. .	+ 1.81

ρ^1 SAGITTARII.

		h. m. s.	° ′ ″
Aug. 16	E.	19 14 49.72	108 4 0.9
Sept. 19	S.	49.73	3.2
29	W.	49.72	1.7
Mean . . .		19 14 49.72	108 4 1.93
Div., Flex., etc.		. .	+ 2.68

ρ^2 SAGITTARII.

		h. m. s.	° ′ ″
July 25	W.	19 14 57.89	108 31 30.6
Sept. 18	W.	57.95	31.9
Oct. 3	S.	57.86	30.8
Mean . . .		19 14 57.90	108 31 31.10
Div., Flex., etc.		. .	+ 2.68

B. A. C. 6622.

		h. m. s.	° ′ ″
June 16	W.	19 15 42.42	130 50 12.1
Div., Flex., etc.		. .	+ 2.12

B. A. C. 6640.

		h. m. s.	° ′ ″
July 25	W.	19 18 6.32	32 34 38.3
28	R.	6.23	38.4
Mean . . .		19 18 6.28	32 34 38.35
Div., Flex., etc.		. .	+ 1.61

LALANDE 36715.

		h. m. s.	° ′ ″
July 5	W.	19 20 55.12	77 12 . .
25	W.	55.05	44.2
Sept. 1	W.	54.99	43.3
15	W.	55.08	43.5
Mean . . .		19 20 55.06	77 12 43.67
Div., Flex., etc.		. .	+ 2.49

B. A. C. 6690.

		h. m. s.	° ′ ″
Feb. 10	W.	19 25 57.76	62 17 13.6
July 6	E.	. .	11.9
10	E.	. .	11.4
Mean . . .		19 25 57.76	62 17 12.30
Div., Flex., etc.		. .	+ 2.32

B. A. C. 6690 (Ref.).

		h. m. s.	° ′ ″
July 6	E.	19 25 . .	62 17 13.9
10	E.	. .	14.0
Mean . . .		19 25 . .	62 17 13.95
Div., Flex., etc.		. .	— 0.36

D. M. + 57°, 2013.

		h. m. s.	° ′ ″
Aug. 11	E.	19 27.5	32 16 46.1
Div., Flex., etc.		. .	+ 1.61

D. M. + 57°, 2013 (Ref.).

		h. m. s.	° ′ ″
Aug. 11	E.	19 27.5	32 16 48.2
Div., Flex., etc.		. .	+ 0.19

B. A. C. 6711.

		h. m. s.	° ′ ″
June 16	W.	19 29 29.89	51 29 37.5
July 5	W.	29.95	38.1
25	W.	29.83	37.2
Mean . . .		19 29 29.89	51 29 37.60
Div., Flex., etc.		. .	+ 1.88

ANONYMOUS.

		h. m. s.	° ′ ″
Sept. 18	W. 7.5	19 29 56.79	109 2 36.9
Oct. 4	W. 7.0	56.72	35.9
Mean . . .		19 29 56.76	109 2 36.40
Div., Flex., etc.		. .	+ 2.68

WEISSE 728.

		h. m. s.	° ′ ″
Sept. 19	S.	19 30 4.63	74 38 52.0
29	W.	4.65	50.6
Oct. 3	S.	4.59	50.8
Mean . . .		19 30 4.62	74 38 51.13
Div., Flex., etc.		. .	+ 2.40

LALANDE (F.) 3268.

		h. m. s.	° ′ ″
Oct. 5	E.	19 30 10.23	6 46 7.9
6	W.	10.64	8.0
7	S.	10.46	8.6
Mean . . .		19 30 10.44	6 46 8.17
Div., Flex., etc.		. .	+ 1.42

ANONYMOUS.

		h. m. s.	° ′ ″
Sept. 18	W. 8.0	19 30 21.18	108 59 44.5
Oct. 4	W. 7.0	21.13	44.6
Mean . . .		19 30 21.16	108 59 44.55
Div., Flex., etc.		. .	+ 2.68

ANONYMOUS.

		h. m. s.	° ′ ″
Sept. 15	W. 10.0	19 30 51.57	116 41 37.3
Div., Flex., etc.		. .	+ 2.56

B. A. C. 6720.

		h. m. s.	° ′ ″
Oct. 4	W.	19 31 . .	46 18 46.2
14	W.	0.22	45.9
Mean . . .		19 31 0.22	46 18 46.05
Div., Flex., etc.		. .	+ 1.40

ANONYMOUS.

		h. m. s.	° ′ ″
Sept. 15	W. 9.0	19 31 11.08	116 37 35.4
Div., Flex., etc.		. .	+ 2.57

B. A. C. 6723.

		h. m. s.	° ′ ″
Oct. 6	W.	19 31 16.56	39 0 56.1
14	W.	16.61	56.6
Mean . . .		19 31 16.58	39 0 56.35
Div., Flex., etc.		. .	+ 1.55

GROOMBRIDGE 2884.

		h. m. s.	° ′ ″
Oct. 7	S.	19 32 7.51	49 17 42.4
Div., Flex., etc.		. .	+ 1.59

LALANDE 37303.

		h. m. s.	° ′ ″
Sept. 18	W.	19 32 39.51	49 17 48.2
Div., Flex., etc.		. .	+ 1.59

B. A. C. 6728.

		h. m. s.	° ′ ″
June 16	W.	19 32 47.34	46 33 26.7
Oct. 3	S.	47.24	25.7
Mean . . .		19 32 47.29	46 33 26.20
Div., Flex., etc.		. .	+ 1.43

B. A. C. 6737.

		h. m. s.	° ′ ″
Sept. 29	W.	19 33 31.39	26 49 40.7
Div., Flex., etc.		. .	+ 1.78

RÜMKER 7771.

		h. m. s.	° ′ ″
Sept. 29	W.	19 33 48.36	26 46 17.1
Div., Flex., etc.		. .	+ 1.78

ANONYMOUS.

		h. m. s.	° ′ ″
July 24	R. 10.2	19 36 22.72	95 14 57.7
Aug. 16	E. 11.0	22.74	54.5
Oct. 5	E.	22.74	55.3
Mean . . .		19 36 22.73	95 14 55.83
Div., Flex., etc.		. .	+ 2.33

B. A. C. 6753.

		h. m. s.	° ′ ″
July 6	E.	19 37 55.95	121 11 2.7
10	E.	55.87	3.0
Mean . . .		19 37 55.91	121 11 2.85
Div., Flex., etc.		. .	+ 2.40

Σ (P. M.) 2355[1].

		h. m. s.	° ′ ″
Oct. 6	W.	19 41 4.44	56 40 8.1
7	S.	4.42	9.2
14	W.	4.38	9.7
Mean . . .		19 41 4.41	56 40 9.00
Div., Flex., etc.		. .	+ 2.20

Σ (P. M.) 2355².

		h. m. s.	° ′ ″
Oct. 6	W.	19 41 4.65	56 40 10.7
7	S.	4.74	10.9
14	W.	4.62	11.5
Mean . . .		19 41 4.67	56 40 11.03
Div., Flex., etc.		. .	+ 2.20

δ Cygni.

		h. m. s.	° ′ ″
Feb. 10	W.	19 41 . .	45 9 24.0
July 11	S.	17.24	21.2
Nov. 15	W.	17.28	22.6
Mean . . .		19 41 17.26	45 9 22.60
Div., Flex., etc.		. .	+ 1.31

δ Cygni (Ref.).

		h. m. s.	° ′ ″
July 11	S.	19 41 . .	45 9 23.9
Div., Flex., etc.		. .	+ 0.25

17¹ Cygni.

		h. m. s.	° ′ ″
Sept. 18	W.	19 41 56.93	56 32 44.3
29	W.	56.89	43.9
Oct. 4	W.	56.84	43.2
Mean . . .		19 41 56.89	56 32 43.80
Div., Flex., etc.		. .	+ 2.20

17² Cygni.

		h. m. s.	° ′ ″
Sept. 18	W.	19 41 58.94	56 32 35.9
29	W.	58.81	35.6
Oct. 4	W.	58.89	35.1
Mean . . .		19 41 58.88	56 32 35.53
Div., Flex., etc.		. .	+ 2.20

O. Arg. S. 20008.

		h. m. s.	° ′ ″
Oct. 6	W.	19 44 25.22	117 22 45.8
Div., Flex., etc.		. .	+ 2.54

χ Cygni (Var.).

		h. m. s.	° ′ ″
Oct. 7	S.	19 46 1.88	57 22 59.4
Div., Flex., etc.		. .	+ 2.22

Weisse (2) 1501.

		h. m. s.	° ′ ″
Sept. 18	W.	19 47 3.66	65 18 33.6
Div., Flex., etc.		. .	+ 2.36

B. A. C. 6816.

		h. m. s.	° ′ ″
Sept. 29	W.	19 47 31.30	123 21 9.2
Oct. 5	E.	31.31	10.1
6	W.	31.21	10.0
Mean . . .		19 47 31.27	123 21 9.77
Div., Flex., etc.		. .	+ 2.29

O. Arg. N. 19720.

		h. m. s.	° ′ ″
Sept. 15	W.	19 48 25.71	43 16 33.5
Div., Flex., etc.		. .	+ 1.34

B. A. C. 6830.

		h. m. s.	° ′ ″
Oct. 3	S.	19 48 38.58	42 22 19.7
14	W.	38.71	19.3
Mean . . .		19 48 38.64	42 22 19.50
Div., Flex., etc.		. .	+ 1.40

B. A. C. 6843.

		h. m. s.	° ′ ″
Sept. 18	W.	19 52 3.29	125 35 37.1
29	W.	3.38	34.7
Oct. 5	E.	3.20	36.6
Mean . . .		19 52 3.29	125 35 36.13
Div., Flex., etc.		. .	+ 2.22

B. A. C. 6858.

		h. m. s.	° ′ ″
Nov. 15	W.	19 53 30.57	70 49 37.3
Div., Flex., etc.		. .	+ 2.34

B. A. C. 6865.

		h. m. s.	° ′ ″
Sept. 15	W.	19 53 31.59	39 24 51.6
Div., Flex., etc.		. .	+ 1.55

B. A. C. 6867.

		h. m. s.	° ′ ″
Oct. 4	W.	19 53 40.44	31 28 6.6
6	W.	40.42	6.8
7	S.	40.30	4.9
Mean . . .		19 53 40.39	31 28 6.10
Div., Flex., etc.		. .	+ 1.65

Weisse (2) 1739.

		h. m. s.	° ′ ″
Oct. 3	S.	19 53 57.18	59 20 6.2
Div., Flex., etc.		. .	+ 2.25

Anonymous.

		h. m. s.	° ′ ″
Oct. 5	E. 12.0	19 57 44.80	102 48 20.9
6	W. 12.0	. .	25.6
14	W.	44.59	23.0
Mean . . .		19 57 44.70	102 48 23.17
Div., Flex., etc.		. .	+ 2.42

B. A. C. 6886.

		h. m. s.	° ′ ″
Sept. 15	W.	19 58 0.29	123 19 53.2
18	W.	0.49	55.9
29	W.	0.43	. .
Oct. 3	S.	0.46	55.3
Mean . . .		19 58 0.42	123 19 54.80
Div., Flex., etc.		. .	+ 2.29

B. A. C. 6905.

		h. m. s.	° ′ ″
Nov. 15	W.	20 0 13.54	25 30 31.7
Div., Flex., etc.		. .	+ 1.82

B. A. C. 6905, S. P.

		h. m. s.	° ′ ″
Nov. 15	W.	20 0 13.62	334 29 24.2
Div., Flex., etc.		. .	+ 1.17

B. A. C. 6922.

		h. m. s.	° ′ ″
Sept. 15	W.	20 3 26.80	126 23 45.1
Oct. 3	S.	26.70	45.9
7	S.	26.62	46.9
Mean . . .		20 3 26.71	126 23 45.97
Div., Flex., etc.		. .	+ 2.18

31 Cygni.

		h. m. s.	° ′ ″
Sept. 18	W.	20 9 . .	43 36 56.0
Oct. 4	W.	54.98	55.6
6	W.	55.13	. .
Mean . . .		20 9 55.06	43 36 55.80
Div., Flex., etc.		. .	+ 1.33

31 Cygni (Ref.).

		h. m. s.	° ′ ″
Sept. 18	W.	20 9 . .	43 36 59.5
Div., Flex., etc.		. .	+ 0.24

Piazzi 63.

		h. m. s.	° ′ ″
Oct. 4	W.	20 9 56.16	43 38 42.8
Div., Flex., etc.		. .	+ 1.33

B. A. C. 7029.

		h. m. s.	° ′ ″
Sept. 15	W.	20 19.1	58 11 22.0
18	W.	. .	23.7
Oct. 7	S.	. .	21.9
Mean . . .		2 19.1	58 11 22.53
Div., Flex., etc.		. .	+ 2.23

B. A. C. 7029 (Ref.).

		h. m. s.	° ′ ″
Sept. 15	W.	20 19 . .	58 11 24.7
18	W.	. .	24.0
Oct. 7	S.	. .	25.1
Mean . . .		20 19 . .	58 11 24.60
Div., Flex., etc.		. .	— 0.09

B. A. C. 7230.

		h. m. s.	° ′ ″
Aug. 8	W.	20 40 45.54	6 47 5.7
Div., Flex., etc.		. .	+ 1.42

ε Cygni.

		h. m. s.	° ′ ″
Feb. 17	W.	20 41 26.24	56 28 14.4
Mar. 2	W.	26.12	16.0
Oct. 3	S.	. .	13.3
Mean . . .		20 41 26.18	56 28 14.57
Div., Flex., etc.		. .	+ 2.20

ε Cygni (Ref.).

		h. m. s.	° ′ ″
Oct. 3	S.	20 41 . .	56 28 15.2
Div., Flex., etc.		. .	— 0.11

B. A. C. 7256.

		h. m. s.	° ′ ″
Oct. 4	W.	20 49.5	62 23 24.1
5	E.	. .	22.0
6	W.	. .	22.9
Mean . . .		. .	62 23 23.00
Div., Flex., etc.		. .	+ 2.32

B. A. C. 7256 (Ref.).

		h. m. s.	° ′ ″
Oct. 4	W.	20 49.5	62 23 26.6
5	E.	. .	25.8
6	W.	. .	26.1
Mean . . .		. .	62 23 26.17
Div., Flex., etc.		. .	— 0.36

B. A. C. 7345.

		h. m. s.	° ′ ″
Sept. 29	W.	21 2 32.45	42 49 20.2
Div., Flex., etc.		. .	+ 1.37

τ Cygni.

		h. m. s.	° ′ ″
Sept. 29	W.	21 10 5.08	52 27 25.7
Oct. 4	W.	4.90	25.1
Mean . . .		20 10 4.99	52 27 25.40
Div., Flex., etc.		. .	+ 2.00

ζ Capricorni.

		h. m. s.	° ′ ″
Sept. 29	W.	21 19 55.69	112 55 14.6
Oct. 4	W.	55.72	14.7
Mean . . .		21 19 55.70	112 55 14.65
Div., Flex., etc.		. .	+ 2.59

16 Pegasi.

		h. m. s.	° ′ ″
July 28	R.	21 47.7	64 37 44.4
Div., Flex., etc.		. .	+ 2.37

16 Pegasi (Ref.).

		h. m. s.	° ′ ″
July 28	R.	21 47.7	64 37 46.9
Div., Flex., etc.		. .	— 0.34

π^1 Pegasi.

		h. m. s.	° ′ ″
Nov. 8	W.	22 4 0.00	57 24 12.1
Div., Flex., etc.		. .	+ 2.22

π^2 Pegasi.

		h. m. s.	° ′ ″
April 12	W.	22 4 44.71	57 24 0.5
Nov. 8	W.	44.80	23 59.8
Mean . . .		22 4 44.76	57 24 0.15
Div., Flex., etc.		. .	+ 2.22

γ Aquarii.

		h. m. s.	° ′ ″
Aug. 14	W.	22 15 33.66	91 58 50.6
Nov. 8	W.	33.70	51.6
Mean . . .		22 15 33.68	91 58 51.10
Div., Flex., etc.		. .	+ 2.44

Groombridge 3756.

		h. m. s.	° ′ ″
Sept. 18	W.	22 16 54.87	14 6 16.6
29	W.	55.13	16.1
Oct. 4	W.	54.37	15.2
Mean . . .		22 16 54.79	14 6 15.97
Div., Flex., etc.		. .	+ 1.50

B. A. C. 7855.

		h. m. s.	° ′ ″
Nov. 8	W.	22 26 26.02	40 19 24.3
Div., Flex., etc.		. .	+ 1.52

B. A. C. 7923.

		h. m. s.	° ′ ″
Aug. 14	W.	22 37.5	60 23 42.0
Div., Flex., etc.		. .	+ 2.27

B. A. C. 7923 (Ref.).

		h. m. s.	° ′ ″
Aug. 14	W.	22 37.5	60 23 44.2
Div., Flex., etc.		. .	— 0.24

λ Pegasi.

		h. m. s.	° ′ ″
Nov. 8	W.	22 40 50.91	67 3 15.6
Div., Flex., etc.		. .	+ 2.32

74 Aquarii.

		h. m. s.	° ′ ″
Aug. 14	W.	22 47 15.80	102 14 35.0
Sept. 15	W.	15.82	36.1
18	W.	15.91	35.4
29	W.	15.96	35.7
Oct. 4	W.	15.87	34.0
30	S.	15.95	33.2
Nov. 6	S.	15.93	34.5
11	S.	15.83	34.0
16	S.	15.87	34.9
20	S.	15.90	34.5
Mean . . .		22 47 15.88	102 14 34.73
Div., Flex., etc.		. .	+ 2.42

Weisse 966.

		h. m. s.	° ′ ″
Oct. 3	S.	22 47 53.55	102 48 56.7
7	S.	53.68	57.9
Nov. 8	W.	53.80	57.0
14	S.	53.66	56.4
15	W.	53.64	56.4
21	W.	53.74	55.6
23	W.	53.69	57.9
24	S.	53.61	56.4
25	W.	53.72	57.3
27	S.	53.64	56.7
Mean . . .		22 47 53.67	102 48 56.83
Div., Flex., etc.		. .	+ 2.42

Weisse 1047.

		h. m. s.	° ′ ″
Aug. 14	W.	22 51 55.52	101 45 42.0
Sept. 15	W.	55.41	43.9
18	W.	55.30	42.4
29	W.	55.40	43.2
Oct. 3	S.	55.33	41.8
4	W.	55.33	42.7
7	S.	55.31	43.0
Nov. 11	S.	55.40	41.3
14	S.	55.47	41.7
20	S.	55.38	42.4
Mean . . .		22 51 55.38	101 45 42.44
Div., Flex., etc.		. .	+ 2.42

Weisse 1079.

		h. m. s.	° ′ ″
Aug. 14	W.	22 53 22.66	103 42 8.4
18	W.	22.81	9.0
Sept. 18	W.	22.78	9.8
29	W.	22.72	10.2
Oct. 4	W.	22.71	8.3
30	S.	22.82	7.6
Nov. 6	S.	22.87	7.7
20	S.	22.84	8.7
21	S.	22.84	8.1
23	S.	22.77	7.3
27	W	22.71	8.1
Mean . . .		22 53 22.78	103 42 8.47
Div., Flex., etc.		. .	+ 2.42

Weisse 1156.

		h. m. s.	° ′ ″
Sept. 15	W.	22 56 21.28	101 53 56.8
Oct. 3	S.	21.35	56.0
7	S.	21.29	56.7
Nov. 6	S.	21.32	56.0
8	W.	21.35	56.2
11	S.	21.34	55.3
14	S.	21.33	54.6
15	W.	21.29	55.9
20	S.	21.36	56.7
21	W.	21.21	54.2
23	W.	21.26	55.7
24	W.	21.23	55.5
Mean . . .		22 56 21.30	101 53 55.80
Div., Flex., etc.		. .	+ 2.42

Weisse 1204.

		h. m. s.	° ′ ″
Aug. 14	W.	22 58 18.60	102 48 49.4
Sept. 18	W.	18.77	49.6
29	W.	18.70	50.3
Oct. 4	W.	18.71	50.3
Nov. 8	W	18.79	49.8
14	S.	18.74	48.3
21	S.	18.72	49.5
23	S.	18.60	49.5
24	S.	18.64	49.7
25	S.	18.69	48.0
Mean . . .		22 58 18.70	102 48 49.44
Div., Flex., etc.		. .	+ 2.42

Anonymous.

		h. m. s.	° ′ ″
Sept. 15	W.	22 59 19.10	102 3 32.2
Div., Flex., etc.		. .	+ 2.42

Weisse 1232.

		h. m. s.	° ′ ″
Oct. 7	S.	22 59 43.56	101 4 24.8
30	S.	43.65	23.4
Nov. 25	W.	43.51	25.6
27	W.	43.46	24.2
30	W.	43.43	23.7
Dec. 2	W.	43.55	25.3
3	W.	43.45	25.5
7	S.	43.55	24.2
11	S.	43.58	24.7
14	S.	43.55	25.7
Mean . . .		22 59 43.53	101 4 24.71
Div., Flex., etc.		. .	+ 2.40

Weisse 1249.

		h. m. s.	° ′ ″
Nov. 11	S.	23 0 47.45	103 21 48.8
15	W.	47.33	48.3
21	W.	47.42	47.4
23	W.	47.38	48.8
24	W.	47.33	48.4
27	S.	. .	48.4
30	W.	47.27	. .
Dec. 3	S.	47.52	48.5
7	S.	47.30	48.7
11	S.	47.41	48.3
Mean . . .		23 0 47.38	103 21 48.4
Div., Flex., etc.		. .	+ 2.42

Weisse 1261.

		h. m. s.	° ′ ″
Aug. 14	W.	23 1 13.49	102 26 36.4
Sept. 18	W.	13.60	37.3
29	W.	13.58	37.5
Oct. 4	W.	13.62	37.1
Nov. 6	S.	13.66	36.3
8	W.	13.69	36.5

WEISSE 1261—Continued.

		h. m. s.	° ′ ″
Nov. 25	S.	23 1 13.63	102 26 36.3
27	S.	. . .	34.5
30	S.	13.64	37.0
Dec. 3	S.	13.70	36.7
Mean . . .		23 1 13.62	102 26 36.56
Div., Flex., etc.		. .	+ 2.42

WEISSE 49.

		h. m. s.	° ′ ″
Sept. 18	W.	23 5 19.64	101 8 51.8
29	W.	19.65	53.9
Oct. 3	S.	19.60	51.1
4	W.	19.63	52.7
7	S.	19.59	51.4
Nov. 8	W.	19.72	52.3
20	S.	19.62	52.6
23	S.	19.57	52.1
Dec. 3	W.	19.54	51.9
7	S.	19.71	51.2
Mean . . .		23 5 19.63	101 8 52.10
Div., Flex., etc.		. .	+ 2.40

WEISSE 57[1].

		h. m. s.	° ′ ″
Aug. 14	W.	23 5 49.00	102 34 20.8
22	W.	49.01	20.3
Sept. 15	W.	48.96	22.6
Oct. 30	S.	49.14	21.0
Nov. 11	S.	49.12	20.5
14	S.	49.15	20.5
15	W.	49.02	22.1
24	S.	49.26	21.0
25	W.	48.97	21.0
27	S.	49.25	21.6
30	S.	49.05	22.4
Mean . . .		23 5 49.08	102 34 21.25
Div., Flex., etc.		. .	+ 2.42

WEISSE 57[2].

		h. m. s.	° ′ ″
Aug. 14	W.	23 5 49.31	102 34 21.8
22	W.	49.30	22.1
Sept. 15	W.	49.27	23.6
Oct. 30	S.	49.41	21.7
Nov. 11	S.	49.51	22.0
14	S.	49.43	21.7
15	W.	49.31	22.6
24	S.	49.56	23.1
25	W.	49.30	21.9
27	S.	49.57	22.8
30	S.	49.34	22.5
Mean . . .		23 5 49.39	102 34 22.35
Div., Flex., etc.		. .	+ 2.42

WEISSE 123.

		h. m. s.	° ′ ″
Oct. 3	S.	23 8 31.08	109 19 45.7
7	S.	31.15	46.1
Nov. 21	W.	31.11	44.3
23	W.	31.11	46.0
24	W.	31.22	46.0
25	S.	31.10	44.7
27	W.	31.03	46.2
30	W.	31.03	46.5
Dec. 2	S.	31.20	45.7
3	S.	31.13	43.8
Mean . . .		23 8 31.12	109 19 45.50
Div., Flex., etc.		. .	+ 2.41

LALANDE 45504.

		h. m. s.	° ′ ″
Nov 8	W.	23 9 11.63	102 12 24.6
14	S.	11.49	24.4
15	W.	11.42	25.0
23	W.	11.37	25.6
25	W.	11.46	24.6
27	W.	11.44	24.5
Dec. 2	W.	11.57	25.7
3	S.	11.58	23.7
7	S.	11.58	24.1
14	S.	11.58	25.4
Mean . . .		23 9 11.51	102 12 24.76
Div., Flex., etc.		. .	+ 2.42

ψ AQUARII.

		h. m. s.	° ′ ″
Sept. 18	W.	23 9 42.56	99 43 47.5
29	W.	42.55	48.3
Oct. 4	W.	42.53	47.1
Nov. 1	W.	42.56	48.2
Dec. 4	S.	42.57	47.1
6	W.	42.71	47.7
11	S.	42.56	47.8
12	S.	42.49	46.9
14	S.	42.57	48.4
16	S.	42.57	47.4
Mean . . .		23 9 42.57	99 43 47.64
Div., Flex., etc.		. .	+ 2.39

WEISSE 185.

		h. m. s.	° ′ ″
Aug. 14	W.	23 11 30.34	102 21 23.8
Sept. 15	W.	30.46	24.1
Oct. 7	S.	30.41	24.2
30	S.	30.47	22.6
Nov. 8	W.	30.53	23.5
11	S.	30.53	23.4
15	W.	30.36	23.4
20	S.	30.47	24.5
21	S.	30.54	22.5
23	W.	30.43	23.7
Mean . . .		23 11 30.45	102 21 23.57
Div., Flex., etc.		. .	+ 2.42

WEISSE 226.

		h. m. s.	° ′ ″
Nov. 14	S.	23 12 49.34	100 15 17.6
24	W.	49.41	17.6
25	S.	49.49	17.3
Dec. 3	W.	49.27	17.7
6	W.	49.54	18.3
12	S.	49.30	18.2
18	S.	49.34	18.8
19	S.	49.39	19.1
30	W.	49.38	18.3
31	W.	49.37	18.5
Mean . . .		23 12 49.38	100 15 18.14
Div., Flex., etc.		. .	+ 2.39

WEISSE 228.

		h. m. s.	° ′ ″
Oct. 3	S.	23 12 52.64	102 48 51.7
Nov. 27	W.	52.65	52.9
30	W.	52.66	53.6
Dec. 2	W.	52.67	54.2
3	W.	52.60	53.0
7	S.	52.77	52.5
11	S.	52.67	52.6
14	S.	52.62	53.0
16	S.	52.81	52.5
Mean . . .		23 12 52.68	102 48 52.89
Div., Flex., etc.		. .	+ 2.42

WEISSE 265.

		h. m. s.	° ′ ″
Sept. 18	W.	23 14 44.20	101 10 39.8
29	W.	44.22	39.9
Oct. 4	W.	44.20	39.3
7	S.	44.25	39.7
Nov. 8	W.	44.26	38.9
15	W.	44.12	37.8
23	S.	44.20	38.8
24	S.	44.31	37.5
25	S.	44.36	37.5
27	S.	44.37	39.7
Mean . . .		23 14 44.25	101 10 38.89
Div., Flex., etc.		. .	+ 2.40

WEISSE 309.

		h. m. s.	° ′ ″
Aug. 14	W.	23 16 53.10	101 25 8.4
Sept. 15	W.	53.23	10.6
Oct. 3	S.	53.26	8.6
30	S.	53.22	8.3
Nov. 8	W.	53.36	8.9
11	S.	53.28	9.1
15	W.	53.21	8.7
20	S.	53.20	9.0
21	W.	53.33	7.5
30	S.	53.32	7.6
Mean . . .		23 16 53.25	101 25 8.67
Div., Flex., etc.		. .	+ 2.41

WEISSE 315.

		h. m. s.	° ′ ″
Nov. 14	S.	23 17 10.10	100 1 51.7
23	W.	9.99	52.6
24	W.	10.01	52.0
25	W.	9.99	52.1
27	W.	9.84	52.1
30	W.	9.86	52.7
Dec. 2	S.	10.07	52.6
3	S.	9.93	51.5
7	S.	9.98	53.0
11	S.	9.98	52.5
Mean . . .		23 17 9.98	100 1 52.28
Div., Flex., etc.		. .	+ 2.39

WEISSE 377.

		h. m. s.	° ′ ″
Aug. 14	W.	23 20 28.75	100 40 55.6
Sept. 15	W.	28.93	57.8
18	W.	28.90	56.7
29	W.	28.89	57.8
Oct. 3	S.	28.88	56.0
4	W.	28.93	56.8
7	S.	28.93	56.4
30	S.	28.90	54.8
Nov. 11	S.	28.96	55.6
20	S.	28.98	56.6
Mean . . .		23 20 28.90	100 40 56.41
Div., Flex., etc.		. .	+ 2.40

WEISSE 402.

		h. m. s.	° ′ ″
Nov. 8	W.	23 21 56.87	102 5 52.6
14	S.	56.74	51.5
15	W.	56.68	53.0
23	S.	56.70	53.0
24	S.	56.77	51.1
25	S.	56.82	52.1
27	W.	56.75	51.7
30	W.	56.61	52.3
Dec. 2	S.	56.79	50.9
3	W.	56.65	52.6
Mean . . .		23 21 56.74	102 5 52.08
Div., Flex., etc.		. .	+ 2.42

Weisse 427.

		h. m. s.	° ′ ″
Oct. 7	S.	23 22 54.38	99 54 52.2
Nov. 11	S.	54.43	51.7
21	S.	54.40	50.9
23	W.	54.43	52.6
24	W.	54.44	52.8
25	W.	54.46	51.9
27	S.	54.59	51.7
30	S.	54.42	51.4
Dec. 2	W.	54.34	52.5
3	W.	54.35	52.6
Mean . . .		23 22 54.42	99 54 52.03
Div., Flex., etc.		. .	+ 2.39

Weisse 488.

		h. m. s.	° ′ ″
Aug. 14	W.	23 25 49.23	101 38 39.7
Div., Flex., etc.		. .	+ 2.41

Weisse 497.

		h. m. s.	° ′ ″
Sept. 15	W.	23 26 18.94	101 38 58.1
18	W.	18.94	59.4
29	W.	18.94	59.0
Oct. 3	S.	18.94	56.4
4	W.	18.93	58.1
7	S.	18.98	58.9
30	S.	19.00	56.5
Nov. 11	S.	19.01	57.5
14	S.	18.93	57.4
20	S.	18.98	57.9
Mean . . .		23 26 18.96	101 38 57.92
Div., Flex., etc.		. .	+ 2.41

Weisse 571.

		h. m. s.	° ′ ″
Oct. 7	S.	23 29 21.26	101 12 23.8
30	S.	21.26	21.6
Nov. 8	W.	21.42	24.1
15	W.	21.19	23.7
20	S.	21.25	23.9
21	W.	21.22	22.7
23	W.	21.18	24.2
24	W.	21.27	22.3
25	S.	21.34	22.5
27	W.	21.25	23.3
30	S.	21.38	22.1
Mean . . .		23 29 21.27	101 12 23.11
Div., Flex., etc.		. .	+ 2.40

Weisse 586.

		h. m. s.	° ′ ″
Aug. 14	W.	23 29 54.75	99 25 0.8
Sept. 15	W.	54.71	1.0
18	W.	54.70	1.9
29	W.	54.80	2.2
Oct. 3	S.	54.79	0.9
4	W.	54.80	25 1.7
Nov. 11	S.	54.85	24 59.5
14	S.	54.80	25 0.0
23	S.	54.76	1.2
24	S.	54.86	0.3
Mean . . .		23 29 54.78	99 25 0.95
Div., Flex., etc.		. .	+ 2.39

Weisse 629.

		h. m. s.	° ′ ″
Sept. 15	W.	23 32 6.74	99 16 47.3
18	W.	6.72	47.5
Oct. 3	S.	6.81	46.4
7	S.	6.79	47.4
Nov. 8	W.	6.89	47.3
11	S.	6.83	46.0
14	S.	6.82	45.8
15	W.	6.71	45.9
20	S.	6.77	46.4
21	W.	6.73	44.2
Mean . . .		23 32 6.78	99 16 46.42
Div., Flex., etc.		. .	+ 2.39

106 Aquarii.

		h. m. s.	° ′ ″
Oct. 3	S.	23 38 4.81	108 55 51.4
Nov. 15	W.	4.78	50.6
Mean . . .		23 38 4.80	108 55 51.00
Div., Flex., etc.		. .	+ 2.68

δ Sculptoris.

		h. m. s.	° ′ ″
Sept. 15	W.	23 42 46.65	118 46 56.7
Oct. 3	S.	46.66	55.4
Nov. 8	W.	46.71	55.6
Mean . . .		23 42 46.67	118 46 55.90
Div., Flex., etc.		. .	+ 2.51

CATALOGUE

OF

MISCELLANEOUS STARS

OBSERVED WITH

THE TRANSIT CIRCLE.

1882.

CATALOGUE

OF

MISCELLANEOUS STARS

OBSERVED IN

THE YEAR 1882

WITH

THE TRANSIT CIRCLE.

Number.	Name of Star.	Magnitude.	Mean Right Ascension, 1882.0.	Annual Precession, 1882.0.	Mean year.	No. of obs.	Mean N. P. Distance, 1882.0.	Annual Precession, 1882.0.	Mean year.	No. of obs.
			h. m. s.	s.			° ′ ″	″		
1	22 Andromedæ	. .	0 4 11.41	+ 3.097	2.9	1	44 35 3.3	− 20.05	2.9	1
2	σ Andromedæ	. .	12 9.91	3.124	2.9	1	53 52 8.1	20.03	2.9	1
3	ι Ceti	. .	13 24.89	3.059	3.0	1	99 28.7	20.02	. .	.
4	Anonymous	. .	14 2.53	3.093	2.7	1	75 54 11.2	20.02	2.7	1
5	B. A. C. 79	. .	17 54.60	3.202	2.9	3	38 38 3.7	19.99	2.9	6
6	B. A. C. 79 (Ref.) . .	. .	. . .	. .	. .	.	38 38 3.3	− 19.99	2.9	6
7	44 Piscium	. .	0 19 21.21	+ 3.075	2.7	1	88 42 49.7	19.98	2.7	1
8	B. A. C. 126	. .	26.3	3.364	. .	.	27 43 11.2	19.92	2.8	1
9	B. A. C. 126 (Ref.) .	. .	. . .	. .	. .	.	27 43 11.4	19.92	2.8	1
10	B. A. C. 166	. .	33 1.30	3.184	2.9	2	59 47 6.1	19.85	2.9	4
11	B. A. C. 166 (Ref.) .	. .	. . .	. .	. .	.	59 47 5.6	− 19.85	2.9	4
12	o Cassiopeæ	. .	38 9.32	+ 3.315	2.9	2	42 21 42.4	19.78	2.9	3
13	o Cassiopeæ (Ref.). . .	. .	. . .	. .	. .	.	42 21 42.3	19.78	2.9	2
14	Lalande 1251	. .	40 40.20	3.051	2.8	1	95 3 50.1	19.74	2.8	1
15	δ Piscium	. .	42 33.63	3.102	2.9	4	83 3 26.0	19.71	2.9	3
16	B. A. C. 253	. .	0 49 35.66	+ 3.570	2.3	1	29 55 21.0	− 19.59	2.3	1
17	μ Andromedæ	. .	50 12.44	3.298	3.0	1	52 8.4	19.57	. .	.
18	D. M. + 60°, 146 . .	. .	55 20.50	3.647	2.9	2	29 2 54.6	19.47	2.9	2
19	70 Piscium	. .	55 58.72	3.114	2.9	2	82 41 45.2	19.46	2.9	2
20	B. A. C. 302	. .	0 58 56.97	3.715	2.9	1	27 52 13.0	19.39	2.9	1
21	B. A C. 326	. .	1 2 6.66	+ 2.836	2.9	1	123 26 36.1	− 19.32	2.9	1
22	B. A. C. 362	. .	6 48.82	2.838	2.9	2	121 25 36.9	19.21	2.9	2
23	Taylor 407	. .	9 51.86	2.654	2.9	2	136 9 48.1	19.13	2.9	2
24	B. A. C. 466	. .	27 39.33	2.690	2.9	1	127 28 18.7	18.60	2.9	1
25	B. A. C. 489	. .	30 41.44	2.769	2.9	1	120 30 43.5	18.50	2.9	1

Number.	Name of Star.	Magnitude.	Mean Right Ascension, 1882.0.	Annual Precession, 1882.0.	Mean year.	No. of obs.	Mean N. P. Distance, 1882.0.	Annual Precession, 1882.0.	Mean year.	No. of obs.
			h. m. s.	s.			° ′ ″	″		
26	ν Piscium	. .	1 35 17.48	+ 3.119	3.0	1	85 6.6	— 18.35	. .	.
27	B. A. C. 558	. .	44 14.78	3.897	2.9	2	35 26 16.2	18.02	2.9	2
28	ζ Ceti	. .	45 38.29	2.958	2.4	1	100 55 5.8	17.96	2.4	1
29	ε Cassiopeæ	. .	45 55.21	4.247	3.0	1	26 54.7	17.95	. .	.
30	B. A. C. 570	. .	46 24.44	2.563	2.9	1	130 25 9.6	17.93	2.9	1
31	Taylor 660	. .	1 54 31.26	+ 2.510	2.9	1	131 17 59.6	— 17.60	2.9	1
32	B. A. C. 627	. .	55 58.72	2.690	2.9	1	120 34 9.5	17.54	2.9	1
33	γ Andromedæ	. .	1 56 39.64	3.653	2.7	2	48 14 14.7	17.51	2.4	1
34	β Trianguli	. .	2 2.5	3.539	. .	.	55 34 18.6	17.26	2.2	1
35	67 Ceti	. .	11 5.93	2.984	3.0	1	96 57.9	16.86	. .	.
36	ι^2 Cassiopeæ, S. P. . . .	8.4	2 19 22.75	+ 4.861	2.4	2	336 52 13.4	+ 16.46	2.4	2
37	Anonymous	9.5	21 8.06	3.535	2.9	1	59 3 19.3	— 16.37	2.9	1
38	B. A. C. 777, S. P. . .	. .	26 50.80	- 5.577	2.4	1	342 18 2.8	+ 16.08	2.4	1
39	δ Ceti	. .	33 26.10	3.070	2.8	2	90 10 51.9	— 15.73	2.5	1
40	B. A. C. 818	. .	33 39.21	2.412	2.9	1	128 29 59.3	15.71	2.9	1
41	B. A. C. 886	. .	2 45 28.59	+ 2.423	2.9	1	126 19 59.9	— 15.05	2.9	1
42	B. A. C. 902	. .	48 57.12	2.347	2.9	1	128 55 14.3	14.85	2.9	1
43	47 Cephei, S. P.	. .	50 27.70	7.708	2.4	2	348 57 0.4	+ 14.76	2.4	2
44	η Eridani	. .	50 39.83	2.923	3.0	1	99 22.0	— 14.75	. .	.
45	B. A. C. 923	. .	52 3.85	2.413	2.0	1	125 51 12.9	14.67	2.0	1
46	B. A. C. 924	. .	2 52 13.43	+ 2.538	2.5	2	120 19 49.7	— 14.65	2.5	2
47	O. Arg. N. 3339, S. P. .	8.7	52 33.75	5.610	2.4	1	340 11 21.6	+ 14.63	2.4	1
48	B. A. C. 908, S. P. . .	. .	53 30.38	8.877	2.4	1	351 0 43.4	14.58	2.4	1
49	Lalande (F.) 495, S. P.	. .	56 20.82	5.258	2.4	3	336 56 58.3	14.40	2.4	3
50	Bonn VI+67°, 244, S.P.	8.8	2 57 13.46	5.285	2.4	3	337 7 4.1	14.35	2.4	3
51	β Persei	. .	3 0 29.78	+ 3.882	2.5	1	49 29 59.4	— 14.15	2.5	1
52	B. A. C. 997	. .	7 3.58	2.522	2.1	1	119 27 9.2	13.74	2.1	1
53	O. Arg. N. 3875 . . .	. .	24 40.38	4.536	2.0	2	35 25 37.6	12.57	2.0	2
54	B. A. C. 1122	. .	32 36.09	2.276	2.1	3	126 40 53.9	12.03	2.1	3
55	γ Camelopardalis, S. P. .	. .	37 55.62	6.227	2.5	3	340 57 59.5	+ 11.65	2.5	3
56	ε Persei	. .	3 49 56.21	+ 4.007	2.4	2	50 19 57.2	— 10.78	2.4	2
57	B. A. C. 1227	. .	50 15.29	2.102	2.1	1	130 42 21.7	10.76	2.1	1
58	c Persei	. .	3 59.9	4.331	. .	.	42 36 14.8	10.03	2.1	3
59	c Persei (Ref.).	. .	. . .	. .	. .	.	42 36 14.7	10.03	2.1	3
60	B. A. C. 1287	. .	4 6.2	4.383	. .	.	41 53 31.7	9.55	2.1	1
61	B. A. C. 1287 (Ref.). .	. .	. . .	. .	. .	.	41 53 32.0	— 9.55	2.1	1
62	B. A. C. 1276	. .	4 6 34.34	+10.132	2.1	2	9 27 40.8	9.52	2.1	2
63	IV, 1^1	. .	10 29.08	2.408	2.1	1	119 12 58.3	9.22	2.1	1
64	IV, 1^2	. .	10 30.23	2.408	2.1	1	119 14 27.8	9.22	2.1	1
65	Weisse (2) 248 . . .	. .	13 33.70	3.471	2.1	2	71 32 28.0	8.98	2.1	2

Number.	Name of Star.	Magnitude	Mean Right Ascension, 1882.0.	Annual Precession, 1882.0.	Mean year.	No. of obs.	Mean N. P. Distance, 1882.0.	Annual Precession, 1882.0.	Mean year.	No. of obs.
			h. m. s.	s.			° ′ ″	″		
66	B. A. C. 1372	. .	4 19 36.34	+ 2.247	2.1	3	124 17 31.0	— 8.51	2.1	3
67	Weisse (2) 421 . . .	. .	21 25.00	3.776	2.1	1	59 54 7.6	8.36	2.1	1
68	Weisse (2) 422 . . .	. .	21 25.78	3.777	2.1	1	59 53 55.5	8.36	2.1	1
69	θ^1 Tauri	. .	21 50.09	3.414	2.1	1	74 18 5.7	8.33	2.1	1
70	B. A. C. 1389	. .	22 38.90	2.021	2.1	1	130 47 45.4	8.26	2.1	1
71	Lalande 8612	. .	4 27 51.96	+ 3.187	2.1	2	84 40 48.1	— 7.85	2.1	2
72	Weisse (2) 650 . . .	. .	31 18.16	3.534	2.1	2	69 33 13.9	7.57	2.1	2
73	Weisse 777	8.7	36 55.20	3.092	2.1	2	89 7 0.0	7.11	2.1	2
74	D. M. + 1°, 808 . .	9.4	37 56.20	3.113	2.1	2	88 8 42.0	7.03	2.1	2
75	D. M. + 1°, 809 . .	8.0	37 59.46	3.113	2.1	2	88 8 25.4	7.02	2.1	2
76	B. A. C. 1467	. .	4 38 35.72	+ 2.320	2.2	1	120 59 9.6	— 6.97	2.2	1
77	B. A. C. 1483	. .	41 54.27	2.031	2.2	1	129 34 15.9	6.70	2.2	1
78	Weisse 902	. .	43 25.02	3.116	2.1	1	88 0 18.3	6.58	2.1	1
79	IV, 6	. .	45 46.41	2.418	2.1	1	117 18 11.7	6.38	2.1	1
80	Lalande 9258	8.5	52 50.42	5.312	2.1	2	29 45 7.5	5.79	2.1	2
81	B. A. C. 1536	. .	4 52 55.48	+ 5.314	2.1	2	29 43 57.5	— 5.79	2.1	3
82	B. A. C. 1536 (Ref.) .	. .	. . .	. .	. .	.	29 43 56.6	5.79	2.1	1
83	B. A. C. 1555	. .	57 19.67	3.569	2.1	1	68 53 20.0	5.42	2.1	1
84	Weisse 1296	. .	4 59 18.13	3.095	2.1	3	88 59 8.7	5.25	2.1	3
85	Weisse (2) 1421[1] . .	6.9	5 2 20.58	3.757	2.1	3	62 7 15.7	4.99	2.1	3
86	Weisse (2) 1421[2] . .	8.4	5 2 21.06	+ 3.757	2.1	3	62 7 4.8	— 4.99	2.1	3
87	Bonn VI + 62°, 742 .	. .	9 21.69	5.581	2.1	1	27 28 32.4	4.40	2.1	1
88	B. A. C. 1633	. .	10 18.50	2.120	2.1	2	126 6 46.7	4.31	2.1	2
89	Weisse (2) 245 . . .	. .	10 57.01	3.934	2.1	1	56 36.2	. .	. .	.
90	Weisse (2) 247 . . .	. .	10 57.39	3.934	2.1	1	56 36.0	. .	. .	.
91	B. A. C. 1619	. .	5 11 16.49	+ 9.150	2.1	1	12 8 6.0	— 4.23	2.1	1
92	Weisse (2) 266 . . .	. .	12 57.70	4.209	2.1	1	49 2 13.3	4.09	2.1	1
93	B. A. C. 1661	. .	15 53.36	3.152	2.1	2	86 32 43.0	3.84	2.1	2
94	Weisse 342	. .	16 37.90	3.151	2.1	2	86 34 13.1	3.77	2.1	2
95	Weisse 343	8.0	16 38.93	3.151	2.1	1	86 33 45.2	3.77	2.1	1
96	B. A. C. 1719	. .	5 23 18.07	+ 1.923	2.1	1	131 2 49.9	— 3.20	2.1	1
97	B. A. C. 1718	. .	23 27.14	2.231	2.1	1	122 30 53.2	3.18	2.1	1
98	Weisse 619	. .	26 43.19	3.034	2.1	2	91 40 43.6	2.90	2.1	2
99	B. A. C. 1739	. .	27 1.59	2.126	2.1	1	125 33 31.0	2.87	2.1	1
100	B. A. C. 1756	. .	28 53.01	2.015	2.1	1	128 35 48.9	2.71	2.1	1
101	B. A. C. 1753	. .	5 28 54.12	+ 2.137	2.1	2	125 13 19.7	— 2.71	2.1	2
102	Lalande 10527 . . .	6.0	29 15.00	2.931	2.1	1	96 5 20.2	2.68	2.1	1
103	B. A. C. 1752	7.0	29 16.66	2.931	2.1	1	96 4 54.2	2.68	2.1	1
104	ι^1 Orionis	. .	29 39.66	2.933	2.1	1	95 59 19.8	2.65	2.1	1
105	ι^2 Orionis	8.0	29 40.21	2.933	2.1	1	95 59 29.1	2.65	2.1	1

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			h. m. s.	s.			° ′ ″	″		
106	Lalande 10583 . . .	8.8	5 32 2.65	+ 3.983	2.1	2	55 32 38.2	— 2.44	2.1	2
107	Lalande 10597 . . .	. .	32 35.60	3.984	2.1	1	55 31 5.2	2.39	2.1	1
108	B. A. C. 1848	. .	43 31.92	3.779	2.1	1	62 4 8.4	1.44	2.1	1
109	Lalande 11061 . . .	. .	43 58.30	4.096	2.1	3	85 36 43.9	1.40	2.1	3
110	Lalande 11040 . . .	7.8	44 6.50	3.871	2.1	3	59 4 39.0	1.39	2.1	3
111	B. A. C. 1849	. .	5 44 23.90	+ 5.369	2.2	1	30 8 27.5	— 1.36	2.2	1
112	D. M. + 31°, 1126 .	9.5	44 50.72	3.898	2.1	2	58 14 41.2	1.32	2.1	2
113	Lalande 11088 . . .	. .	45 24.02	3.554	2.2	1	70 9 49.3	1.28	2.2	1
114	B. A. C. 1865	. .	45 24.56	2.282	2.2	1	120 39 24.8	1.28	2.2	1
115	B. A. C. 1889	. .	48 31.74	2.042	2.1	1	127 39 27.4	1.00	2.1	1
116	B. A. C. 1892	. .	5 48 50.60	+ 2.008	2.2	1	128 33 10.9	— 0.98	2.2	1
117	β Aurigæ	. .	50 52.53	4.405	2.4	1	45 3 59.5	0.80	2.4	1
118	B. A. C. 1904	. .	51 1.95	1.952	2.1	1	129 58 46.9	0.78	2.1	1
119	B. A. C. 1906	. .	51 26.42	2.060	2.2	2	127 8 21.6	0.75	2.2	2
120	Taylor 2245	. .	52 24.74	2.238	2.1	1	121 59 32.3	0.66	2.1	1
121	χ^3 Orionis	. .	5 56 28.19	+ 3.551	2.1	2	70 18 34.1	— 0.31	2.1	2
122	χ^4 Orionis	. .	56 54.72	3.563	2.1	2	69 51 37.1	0.27	2.1	2
123	D. M. + 17°, 1115 .	9.4	58 14.49	3.505	2.1	3	72 4 5.1	0.15	2.1	3
124	Anonymous	10.4	5 58 16.71	3.505	2.1	3	72 2 25.7	— 0.15	2.1	3
125	Piazzi 333	8.0	6 2 34.29	4.596	2.2	1	41 15 53.7	+ 0.22	2.2	1
126	Piazzi 334	6.8	6 2 34.26	+ 4.596	2.2	2	41 16 2.3	+ 0.22	2.2	2
127	B. A. C. 1982	. .	3 28.98	2.056	2.2	1	127 14 14.1	0.30	2.2	1
128	Weisse (2) 26	. .	4 36.42	3.931	2.1	2	57 16 57.7	0.40	2.1	2
129	η Geminorum	. .	7 45.21	3.627	2.1	1	67 27 39.7	0.68	2.1	1
130	Weisse 272	. .	11 22.67	3.416	2.1	1	75 34 30.3	0.99	2.1	1
131	B. A. C. 2036	. .	6 13 0.22	+ 2.041	2.1	1	127 41 52.3	+ 1.14	2.1	1
132	B. A. C. 2037	. .	13 6.73	2.059	2.2	1	127 12 33.3	1.15	2.2	1
133	Anonymous	9.2	13 47.63	6.122	2.2	2	23 38 11.3	1.21	2.2	2
134	Lalande 12148 (*med.*) .	. .	15 57.15	3.496	2.1	2	72 22 10.6	1.39	2.1	2
135	B. A. C. 2066	. .	17 47.95	2.194	2.2	1	123 22 41.4	1.56	2.2	1
136	B. A. C. 2072	. .	6 18 47.31	+ 2.275	2.1	1	120 53 8.6	+ 1.64	2.1	1
137	ν Geminorum	. .	22.0	3.564	. .	.	69 42 53.9	1.92	2.1	1
138	O. Arg. S. 5133 . . .	6.8	22 26.13	2.430	2.1	4	115 46 43.2	1.96	2.1	4
139	O. Arg. S. 5144 . . .	9.0	22 55.69	2.430	2.2	3	115 46 1.6	2.00	2.2	3
140	D. M. + 72°, 325 . .	9.2	25 2.69	7.311	2.1	3	17 24 36.1	+ 2.19	2.1	3
141	D. M. + 72°, 325, S. P.	. .	6 25 2.55	+ 7.311	2.6	3	342 35 25.3	— 2.19	2.6	3
142	Lalande 12494 . . .	. .	25 13.41	3.346	2.2	1	78 22 30.2	+ 2.20	2.2	1
143	O. Arg. N. 6978 . . .	. .	26 35.30	7.122	2.2	2	18 9 20.9	2.32	2.2	2
144	O. Arg. N. 6979 . . .	. .	26 37.84	7.111	2.2	2	18 12 11.3	2.32	2.2	2
145	B. A. C. 2129	. .	54.15	3.410	2.2	3	75 45 20.9	2.35	2.2	3

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			h. m. s.	s.			° ′ ″	″		
146	B. A. C. 2136	. .	6 27 1.10	+ 2.137	2.2	1	125 10 31.1	+ 2.36	2.2	1
147	B. A. C. 2147	. .	28 14.00	2.245	2.1	2	121 56 38.5	2.46	2.1	2
148	B. A. C. 2153	. .	29 12.18	2.016	2.2	1	128 32 11.5	2.55	2.2	1
149	O. Arg. N. 7049 . . .	. .	29 33.13	4.899	2.2	1	35 58 24.6	2.58	2.2	1
150	O. Arg. N. 7052 . . .	. .	29 49.57	4.900	2.2	1	35 57 31.7	2.60	2.2	1
151	B. A. C. 2162	. .	6 30 12.78	+ 2.224	2.2	1	122 37 27.0	+ 2.64	2.2	1
152	B. A. C. 2164	6.4	30 26.04	2.181	2.2	1	123 55 5.9	2.66	2.2	1
153	B. A. C. 2180	. .	33 8.52	2.080	2.1	2	126 53 27.6	2.89	2.1	2
154	B. A. C. 2183	. .	33 22.50	2.238	2.2	2	122 14 25.7	2.91	2.2	2
155	ε Geminorum	. .	36 40.35	3.695	2.4	1	64 45 13.9	3.19	2.2	3
156	ε Geminorum (Ref.) . .	. .	. . . .	. .	. .	.	64 45 13.2	+ 3.19	2.1	2
157	B. A. C. 2202	. .	6 37 23.32	+ 1.956	2.1	3	130 14 19.8	3.26	2.1	3
158	ψ⁵ Aurigæ	. .	38 13.98	4.332	2.2	1	46 18 25.4	3.33	2.2	1
159	Stone 3158	. .	38 16.13	2.032	2.1	1	128 17 0.3	3.33	2.1	1
160	Stone 3159	. .	38 16.83	2.032	2.1	1	128 17 2.3	3.33	2.1	1
161	B. A. C. 2212	. .	6 39 27.02	+ 2.003	2.1	3	129 4 30.5	+ 3.43	2.1	3
162	B. A. C. 2214	. .	39 58.96	2.283	2.2	2	120 57 1.8	3.48	2.2	2
163	D. M. + 72°, 337 . .	9.5	40 19.75	7.268	2.1	3	17 25 14.4	3.51	2.1	3
164	B. A. C. 2218	. .	40 58.13	2.261	2.2	1	121 39 33.6	3.57	2.2	1
165	B. A. C. 2219	. .	41 1.13	2.287	2.2	2	120 49 34.1	3.57	2.2	2
166	Weisse (2) 1227 . . .	. .	6 42 0.03	+ 3.918	2.2	1	57 15 41.4	+ 3.65	2.2	1
167	B. A. C. 2225	. .	42 9.26	2.058	2.2	1	127 39 0.5	3.67	2.2	1
168	B. A. C. 2231	. .	43 19.17	2.054	2.2	1	127 48 2.1	3.77	2.2	1
169	θ Geminorum	. .	45 0.66	3.960	2.6	1	55 53.8	3.91	. .	.
170	O. Arg. N. 7287 . . .	8.7	45 31.11	7.677	2.1	3	15 53 25.3	3.96	2.1	3
171	Yarnall 2789* . . .	. .	6 48 40.14	+ 2.483	2.2	1	114 16 16.7	+ 4.23	2.2	1
172	Yarnall 2790	. .	48 47.50	2.484	2.1	2	114 14 26.3	4.24	2.1	2
173	Weisse 1452	. .	48.8	3.122	. .	.	87 48 33.0	4.24	2.1	1
174	Weisse 1452 (Ref.) .	. .	. . . .	. .	. .	.	87 48 33.1	4.24	2.1	1
175	B. A. C. 2288	. .	53 4.37	2.149	2.1	1	125 21 5.3	4.60	2.1	1
176	Stone 3320	7.2	6 53 21.82	+ 2.151	2.1	1	125 18 29.8	+ 4.63	2.1	1
177	B. A. C. 2295	. .	54 5.90	2.197	2.1	1	123 57 9.9	4.69	2.1	1
178	O. Arg. N. 7479 . . .	. .	54 49.44	4.703	2.1	2	38 32 44.1	4.75	2.1	3
179	Weisse (2) 1633 . . .	. .	55 32.82	3.432	2.2	1	74 29 45.7	4.81	2.2	1
180	Weisse (2) 1630 . . .	. .	55 33.71	3.492	2.2	3	72 4 41.8	4.81	2.2	3
181	B. A. C. 2300¹	. .	6 56 16.91	+ 4.789	2.2	1	37 4 0.7	+ 4.88	2.4	3
182	B. A. C. 2300²	. .	56 17.15	4.789	2.2	1	37 4 4.0	4.88	2.4	3
183	Weisse (2) 1656 . . .	9.1	56 29.02	3.733	2.1	2	62 59 34.2	4.89	2.1	2
184	B. A. C. 2305	. .	57.1	3.563	. .	.	69 15 30.9	4.94	2.1	1
185	B. A. C. 2305 (Ref.) .	. .	. . . .	. .	. .	.	69 15 27.9	4.94	2.1	1

* Faint double Called "brighter star" by the observer. Further observations must decide whether it is the *pr.* or *foll.* star.

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			h. m. s.	s.			° ′ ″	″		
186	B. A. C. 2315	. .	6 57 33.29	+ 2.153	2.1	1	125 22 46.5	+ 4.98	2.1	1
187	B. A. C. 2335	. .	7 1 59.32	2.058	2.2	2	128 12 9.5	5.36	2.2	2
188	Piazzi 344.	. .	2 12.98	1.907	2.2	2	132 8 47.5	5.38	2.2	2
189	Anonymous	8.0	3 21.92	2.438	2.1	2	116 15 36.5	5.47	2.1	2
190	63 Aurigæ	. .	3 32.35	4.133	2.1	1	50 29 18.6	5.49	2.1	1
191	B. A. C. 2355	. .	7 4 53.41	+ 2.015	2.2	2	129 28 1.0	+ 5.60	2.2	2
192	B. A. C. 2326	. .	6 9.45	12.985	2.2	1	7 21 57.9	5.71	2.2	1
193	D. M. + 49°, 1607 .	9.5	6 15.81	4.563	2.1	2	40 42 38.2	5.72	2.1	2
194	D. M. + 49°, 1608 .	9.8	6 33.40	4.562	2.1	2	40 42 14.4	5.74	2.1	2
195	B. A. C. 2372	. .	7 22.07	2.040	2.2	1	128 54 30.6	5.81	2.2	1
196	Taylor 2910	. .	7 7 31.31	+ 2.315	2.1	1	120 37 32.4	+ 5.82	2.1	1
197	B. A. C. 2378	. .	8 14.24	2.132	2.2	1	126 20 48.0	5.88	2.2	1
198	B. A. C. 2385	. .	9 14.84	2.309	2.2	2	120 52 55.3	5.97	2.2	2
199	B. A. C. 2386	. .	9 22.26	2.332	2.2	2	120 8 15.9	5.98	2.2	3
200	VII, 3^1	7.5	12.4	2.318	. .	.	120 41 49.1	6.23	2.2	1
201	VII, 3^2	5.5	7 12 23.61	+ 2.318	2.2	1	120 41 9.4	+ 6.23	2.2	2
202	B. A. C. 2413	. .	12 37.23	2.136	2.2	1	126 22 58.3	6.25	2.2	1
203	δ^1 Geminorum	. .	13 4.26	3.590	2.3	1	67 48 12.7	6.29	2.3	1
204	B. A. C. 2430	. .	15 2.14	2.090	2.2	1	127 49 22.3	6.45	2.2	1
205	Weisse (2) 393 . . .	8.2	15 5.79	3.805	2.2	1	59 57 4.4	6.45	2.2	1
206	B. A. C. 2446	. .	7 18 5.44	+ 2.290	2.1	1	121 49 14.6	+ 6.70	2.1	1
207	B. A. C. 2449	. .	18 30.01	2.295	2.1	1	121 41 51.3	6.74	2.1	1
208	B. A. C. 2439	. .	18 35.64	6.302	2.9	1	21 17 44.4	6.74	2.9	1
209	B. A. C. 2452	. .	19 2.09	2.287	2.2	2	121 58 26.8	6.78	2.2	2
210	Piazzi 103	6.0	19.2	2.373	. .	.	119 3 37.8	6.79	2.2	1
211	B. A. C. 2456	. .	7 19 17.53	+ 2.346	2.2	1	119 59 17.4	+ 6.80	2.2	1
212	B. A. C. 2458	2.0	19 25.72	2.373	2.2	2	119 4 26.5	6.81	2.2	3
213	B. A. C. 2462	. .	20.8	3.260	. .	.	81 28 26.3	6.92	2.1	2
214	B. A. C. 2462 (Ref.) .	. .	. . .	. .	. .	.	81 28 25.8	6.92	2.1	2
215	Stone 3672	. .	24 19.22	2.305	2.1	2	121 36 21.9	7.21	2.1	2
216	Stone 3673	. .	7 24 19.87	+ 2.305	2.1	2	121 36 16.7	+ 7.21	2.1	2
217	B. A. C. 2479	. .	25 0.60	2.079	2.2	3	128 34 8.8	7.27	2.2	3
218	Weisse (2) 704 . . .	6.8	25 46.30	3.604	2.1	2	66 51 44.8	7.33	2.1	2
219	Weisse (2) 703 . . .	9.0	25 46.33	3.604	2.1	2	66 51 56.8	7.33	2.1	2
220	Piazzi 137	. .	26 7.40	2.333	2.2	1	120 42 54.5	7.36	2.2	1
221	α^1 Geminorum	. .	7 27 3.81	+ 3.853	2.4	6	57 51 18.8	+ 7.44	2.4	6
222	Lalande 14734 . . .	. .	27 57.54	3.349	2.9	1	77 26 24.0	7.51	2.9	1
223	D. M. + 11°, 1617 .	8.7	28 11.89	3.332	2.9	1	78 10 17.5	7.53	2.9	1
224	Stone 3761	7.5	33 6.81	2.175	2.1	2	126 9 10.4	7.92	2.1	2
225	B. A. C. 2535	. .	34 24.85	2.098	2.2	3	128 30 44.3	8.03	2.2	3

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			h. m. s.	s.			° ′ ″	″		
226	B. A. C. 2536	. .	7 34 27.42	+ 2.175	2.1	2	126 13 43.2	+ 8.03	2.1	2
227	B. A. C. 2543	. .	35 17.90	2.116	2.1	1	128 2 18.1	8.10	2.1	1
228	Lalande 14961 . . .	. .	35 23.99	3.388	2.2	2	75 31 0.9	8.11	2.2	3
229	B. A. C. 2545	. .	35 33.62	2.122	2.2	3	127 52 8.2	8.12	2.2	3
230	B. A. C. 2546	. .	35 38.12	2.119	2.1	1	127 59 22.7	8.13	2.1	1
231	B. A. C. 2547	. .	7 35 45.34	+ 2.141	2.2	1	127 18 27.4	+ 8.14	2.2	1
232	D. M. + 33°, 1572 . .	. .	36 41.35	3.880	2.1	1	56 29 6.4	8.21	2.1	1
233	B. A. C. 2554	. .	37 6.86	2.111	2.2	3	128 15 32.1	+ 8.25	2.2	3
234	B. A. C. 2320, S. P. . .	. .	37 34.42	71.351	2.7	3	358 58 42.9	— 8.28	2.7	3
235	Weisse (2) 1083 . . .	. .	38 46.83	4.015	2.2	1	52 11 54.4	+ 8.38	2.2	1
236	Weisse (2) 1104 . . .	8.9	7 39 31.95	+ 3.616	2.2	2	65 52 57.7	+ 8.44	2.2	2
237	B. A. C. 2568	. .	39 32.22	2.128	2.2	1	127 55 15.9	8.44	2.2	1
238	B. A. C. 2570	. .	39 40.96	2.032	2.2	1	130 38 46.8	8.45	2.2	1
239	Weisse (2) 1117 . . .	8.8	40 6.65	3.612	2.2	1	66 0 3.8	8.48	2.2	1
240	B. A. C. 2575	. .	40 22.05	2.138	2.2	3	127 39 35.1	8.50	2.2	3
241	Lacaille 2956	7.0	7 40 52.20	+ 2.141	2.2	3	127 36 10.0	+ 8.54	2.2	3
242	Groombridge 1361 . .	7.3	40 52.89	8.704	2.1	3	12 7 16.8	+ 8.54	2.1	3
243	Groombridge 1361, S.P.	. .	40 52.66	8.704	2.6	1	347 52 43.1	— 8.54	2.6	1
244	B. A. C. 2580	. .	41 3.04	2.138	2.2	1	127 41 2.4	+ 8.56	2.2	1
245	B. A. C. 2588	6.0	41 57.97	2.142	2.2	1	127 38 45.8	+ 8.63	2.2	1
246	B. A. C. 2591	. .	7 42 20.61	+ 2.148	2.2	1	127 28 59.8	+ 8.66	2.2	1
247	Weisse (2) 1209 . . .	8.3	43 39.82	3.609	2.2	1	65 57 43.4	8.76	2.2	1
248	B. A. C. 2608	. .	44 50.89	2.234	2.2	1	124 56 51.6	8.86	2.2	1
249	Lalande 15290 . . .	7.5	46 0.58	3.790	2.2	1	59 1 57.6	8.95	2.2	2
250	Anonymous	9.8	48 20.39	3.114	2.9	2	88 0 8.3	9.13	2.9	2
251	B. A. C. 2635	. .	7 48 28.05	+ 2.124	2.2	2	128 33 30.1	+ 9.14	2.2	2
252	B. A. C. 2637	5.5	48 43.11	2.207	2.2	1	126 3 29.8	9.16	2.2	2
253	B. A. C. 2640	. .	49 48.52	2.224	2.2	2	125 34 9.2	9.24	2.2	3
254	B. A. C. 2649	. .	51 47.53	3.430	2.1	2	73 9 53.4	9.40	2.1	2
255	Bonn VI + 23°, 1861	9.5	51 47.56	3.590	2.2	1	66 20 44.7	9.40	2.2	1
256	Lalande 15548 . . .	8.1	7 52 40.67	+ 3.585	2.2	3	66 29 53.5	+ 9.47	2.2	3
257	Lalande 15551 . . .	9.1	52 44.96	3.582	2.2	3	66 35 37.2	9.47	2.2	3
258	B. A. C. 2655	. .	52 57.98	2.392	2.1	2	120 1 5.5	9.49	2.1	2
259	O. Arg. N. 8476 . . .	. .	53 16.88	6.598	2.2	2	18 27 27.8	9.51	2.2	2
260	O. Arg. N. 8511 . . .	. .	55 44.94	6.590	2.2	2	18 23 45.3	9.70	2.2	2
261	Bonn VI + 23°, 1871 .	9.4	7 55 52.30	+ 3.578	2.2	2	66 37 4.6	+ 9.71	2.2	2
262	D. M. + 23°, 1873 . .	9.5	56 24.09	3.578	2.2	1	66 35 5.7	9.75	2.2	1
263	Taylor 3394	. .	58 2.58	1.938	2.2	1	134 16 24.3	9.88	2.2	1
264	Weisse (2) 1566 . . .	. .	58 38.28	4.026	2.1	2	50 38 26.8	9.92	2.1	2
265	B. A. C. 2701	. .	58 41.37	2.063	2.2	4	130 58 50.3	9.93	2.2	4

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			h. m. s.	s.			° ′ ″	″		
266	B. A. C. 2712	. .	7 59 40.27	+ 2.339	2.2	4	122 20 30.8	+ 10.00	2.2	4
267	ζ^1 Cancri	. .	8 5 26.62	3.443	2.8	1	71 59 51.2	10.44	2.5	2
268	ζ^1 Cancri (Ref.).	. .	. . .	. .	. .	.	71 59 52.8	10.44	2.2	1
269	ζ^2 Cancri	. .	5 26.91	3.443	2.8	1	71 59 53.6	10.44	2.8	1
270	Brisbane 1936	7.0	8 52.59	2.251	2.2	1	125 59.2	10.69	. .	.
271	Brisbane 1937	. .	8 8 57.02	+ 2.252	2.2	1	125 57 18.3	+ 10.70	2.2	1
272	B. A. C. 2774	. .	9 2.35	2.265	2.2	1	125 32 38.7	10.70	2.2	1
273	B. A. C. 2777	5.7	9 32.38	2.253	2.2	2	125 57 55.0	10.74	2.2	2
274	Brisbane 1942	6.5	9 32.97	2.253	2.2	2	125 59 2.2	10.74	2.2	2
275	D. M. + 36°, 1782 . .	9.3	9 51.53	3.915	2.2	3	53 15 14.2	10.76	2.2	3
276	B. A. C. 2780	. .	8 9 51.59	+ 2.126	2.2	3	129 59 18.1	+ 10.76	2.2	2
277	D. M. + 36°, 1783 . .	9.5	9 53.52	3.914	2.2	3	53 15 47.3	10.77	2.2	3
278	β Cancri	. .	10.1	3.262	. .	.	80 27 7.3	10.78	2.2	1
279	β Cancri (Ref.).	. .	. . .	. .	. .	.	80 27 7.6	10.78	2.2	1
280	Anonymous	10.6	11 6.90	4.088	2.2	3	47 53 41.8	10.86	2.2	3
281	Mer. C. Z. 168, 6 . . .	. .	8 11 30.82	+ 2.270	2.2	2	125 32 30.2	+ 10.89	2.2	2
282	M. Z. 232, 21	8.5	11 44.38	2.271	2.2	2	125 31 16.6	10.90	2.2	2
283	Anonymous	9.4	12 43.06	2.273	2.2	1	125 33 10.6	10.97	2.2	1
284	Anonymous	9.8	13 18.12	2.384	2.1	2	121 38 54.1	11.02	2.1	2
285	B. A. C. 2795	. .	14 8.34	2.254	2.2	3	126 17 40.7	11.08	2.2	3
286	O. Arg. N. 8887 . . .	8.5	8 14 50.52	+ 4.449	2.2	2	38 56 30.7	+ 11.13	2.2	2
287	B. A. C. 2809	. .	17 8.04	2.170	2.1	1	129 14 46.1	11.30	2.1	1
288	O. Arg. S. 8457 . . .	. .	17 42.12	2.471	2.1	1	118 35 42.6	11.34	2.1	1
289	VIII, 3	. .	18 57.43	2.474	2.1	1	118 35 25.5	11.43	2.1	1
290	B. A. C. 2819	. .	20 26.99	5.054	2.3	2	28 53 21.2	11.53	2.2	3
291	B. A. C. 2819 (Ref.). .	. .	. . .	. .	. .	.	28 53 20.8	+ 11.53	2.2	2
292	O. Arg. N. 9001 . . .	. .	8 21 6.64	+ 4.423	2.1	2	38 56 38.2	11.58	2.1	2
293	D. M. + 7°, 1981 . .	8.9	22 1.93	3.210	2.4	3	82 49 5.4	11.65	2.4	3
294	O. Arg. N. 9029 . . .	. .	23 5.48	4.418	2.1	2	38 53 49.2	11.72	2.1	2
295	Anonymous	11.2	23 10.04	3.205	2.2	2	83 1 9.4	11.73	2.2	2
296	O. Arg. N. 9033 . . .	. .	8 23 18.76	+ 4.413	2.2	2	38 58 40.2	+ 11.74	2.2	2
297	O. Arg. N. 9058 . . .	. .	24 17.98	4.410	2.2	2	38 56 14.4	11.81	2.2	2
298	Bonn VI + 51°, 1438.	. .	26 26.69	4.398	2.2	1	38 59 59.2	11.96	2.2	1
299	Lacaille 3373	. .	26 44.63	2.215	2.2	1	128 39 51.6	11.98	2.2	1
300	B. A. C. 2877[1]	9.0	27 3.06	2.215	2.2	3	128 39 56.3	12.00	2.2	3
301	B. A. C. 2877[2]	6.0	8 27 3.28	+ 2.215	2.2	3	128 40 0.4	+ 12.00	2.2	3
302	Brisbane 2091	. .	27 35.31	2.217	2.4	3	128 40 1.1	12.04	2.4	3
303	O. Arg. N. 9125 . . .	8.7	30 13.04	4.386	2.1	2	38 55 31.3	12.22	2.1	2
304	B. A. C. 2901	. .	31 24.52	3.186	2.3	1	83 53 9.5	12.30	2.3	1
305	Weisse (2) 786 . . .	. .	33 5.72	3.475	2.2	1	69 1 27.4	12.42	2.2	1

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			h. m. s.	s.			° ′ ″	″		
306	Yarnall 3565	9.0	8 33 13.86	+ 3.459	2.2	3	69 46 39.9	+ 12.43	2.2	3
307	Yarnall 3576	. .	33 30.93	3.458	2.2	1	69 47 46.6	12.45	2.2	1
308	Yarnall 3586	7.0	33 36.68	3.459	2.4	3	69 44 55.6	12.46	2.4	3
309	O. Arg. N. 9210 . . .	9.0	33 44.84	4.369	2.1	2	38 55 40.2	12.47	2.1	2
310	γ Cancri	. .	36 27.39	3.489	2.3	1	68 6 30.3	12.65	2.2	3
311	γ Cancri (Ref.)	. .	. . . .	. .	. .	.	68 6 29.8	+ 12.65	2.1	2
312	Weisse (2) 974 . . .	8.5	8 40 2.43	+ 3.450	2.2	1	69 44 7.2	12.89	2.2	1
313	O. Arg. S. 8965 . . .	8.4	41 1.25	2.613	2.9	3	114 14 52.6	12.96	2.9	3
314	σ^2 Cancri (*med.*)	. .	47 2.62	3.672	2.3	2	58 58 29.6	13.36	2.3	2
315	D. M. + 80°, 281 . .	. .	8 50 13.96	+ 9.142	2.2	2	9 12 56.8	+ 13.56	2.2	2
316	D. M. + 80°, 281, S. P.	. .	50 13.88	9.142	2.7	3	350 47 2.4	— 13.56	2.7	3
317	O. Arg. N. 9450 . . .	. .	8 50 17.25	4.186	2.9	1	41 29 48.5	+ 13.57	2.9	1
318	B. A. C. 3146	. .	9 8 13.53	3.117	2.4	4	87 11 19.3	14.68	2.4	4
319	B. A. C. 3162[1] . . .	9.0	11 29.66	3.756	2.3	2	52 41 58.2	14.87	2.3	2
320	B. A. C. 3162[2] . . .	. .	9 11 29.95	+ 3.756	2.2	3	52 41 56.3	+ 14.87	2.2	3
321	α Lyncis	. .	13 51.79	3.691	2.3	1	55 6 34.4	15.01	2.3	1
322	Anonymous	9.1	16 19.58	2.640	2.9	3	116 17 58.0	15.15	2.9	3
323	10 Leonis Minoris . . .	. .	26 59.48	3.694	2.3	2	53 4 46.4	15.75	2.3	2
324	Anonymous	10.0	29 43.22	3.236	2.1	1	78 38 16.5	15.89	2.1	1
325	Anonymous	9.5	9 30 22.41	+ 3.237	2.1	1	78 34 13.3	+ 15.93	2.1	1
326	B. A. C. 3303	. .	33 49.80	3.064	2.3	2	90 36 28.5	16.11	2.3	2
327	o Leonis	. .	34 51.18	4.529	2.6	2	79 34 17.6	16.16	2.4	3
328	o Leonis (Ref.)	. .	. . . .	. .	. .	.	79 34 18.9	16.16	2.2	1
339	D. M. + 20°, 2377 .	9.2	39 58.66	3.355	2.3	4	69 44 40.8	16.43	2.3	.4
330	Anonymous	10.7	9 40 2.42	+ 3.356	2.3	2	69 44 7.2	+ 16.43	2.3	3
331	D. M. + 21°, 2106 .	. .	40 42.06	3.372	2.3	1	68 36 16.6	16.46	2.3	1
332	Anonymous	. .	42 19.12	2.580	2.2	1	123 5 41.6	16.54	2.2	1
333	Weisse 955	8.5	45 28.58	3.208	2.2	2	79 37 56.0	16.70	2.2	2
334	D. M. + 16°, 2042 .	10.2	45 56.32	3.285	2.3	3	73 55 29.9	16.72	2.3	3
335	Bonn VI + 16°, 2047	9.4	9 47 29.60	+ 3.282	2.3	2	73 59 8.3	+ 16.79	2.3	2
336	Anonymous	9.1	52 58.61	2.810	2.9	3	110 25 41.0	17.05	2.9	3
337	Anonymous	8.8	53 45.33	2.823	2.9	1	109 36 30.2	17.09	2.9	1
338	B. A. C. 3415	. .	9 53 58.69	3.178	2.2	1	81 23 25.1	17.10	2.2	2
339	B. A. C. 3415 (Ref.) .	. .	. . . .	. .	. .	.	81 23 26.3	17.10	2.3	1
340	B. A. C. 3453	. .	10 0.9	+ 3.280	. .	.	72 39 44.8	+ 17.41	2.3	3
341	B. A. C. 3453 (Ref.) .	. .	. . . .	. .	. .	.	72 39 46.2	17.41	2.3	3
342	γ^2 Leonis	6.5	13 28.19	3.296	2.5	7	69 33 45.4	17.93	2.5	7
343	Carrington 1547 . . .	. .	18 40.40	7.255	2.2	2	7 47 18.6	+ 18.13	2.2	2
344	Carrington 1547, S. P.	. .	18 40.55	7.254	2.8	3	352 12 39.6	— 18.13	2.8	3

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			h. m. s.	s.			° ′ ″	″		
345	μ Hydræ	. .	10 20 23.06	+ 2.908	2.9	2	106 14 3.5	+ 18.19	2.9	2
346	Weisse 472	8.0	28 19.85	2.974	2.9	1	100 39 52.7	18.47	2.9	1
347	Weisse 481	8.0	28 34.74	2.975	2.9	1	100 39 16.7	18.48	2.9	1
348	Lamont 927	7.9	30 49.77	2.992	2.9	1	99 0 19.7	18.55	2.9	1
349	Anonymous	10.5	36 0.50	3.018	2.2	2	96 28 21.5	18.72	2.2	2
350	41 Leonis Minoris . . .	. .	10 36 59.95	+ 3.281	2.6	2	66 11 39.4	+ 18.75	2.5	3
351	41 Leonis Minoris (Ref.)	. .	. . . .	. .	. .	.	66 11 40.3	18.75	2.3	1
352	Anonymous	10.5	37 9.41	3.019	2.2	5	96 24 12.0	18.76	2.2	5
353	Bonn VI + 11°, 2284	9.9	43 17.32	3.163	2.3	4	78 18 45.0	18.94	2.3	4
354	Anonymous	10.2	43 38.03	3.163	2.3	2	78 17 34.3	18.95	2.3	2
355	D. M. + 11°, 2286 .	9.6	10 44 2.14	+ 3.163	2.2	5	78 17 39.4	+ 18.96	2.2	5
356	46 Leonis Minoris . . .	. .	46 42.71	3.365	2.3	1	55 8.8	19.04	. .	.
357	Anonymous	10.8	51 0.40	3.166	2.3	3	76 44 41.9	19.15	2.3	3
358	Anonymous	11.3	10 51 37.63	3.116	2.1	1	83 44 41.6	19.17	2.1	1
359	ψ Ursæ Majoris	. .	11 3 1.74	3.403	2.3	1	44 51 41.4	19.44	2.3	1
360	B. A. C. 3838	. .	11 8 2.87	+ 3.159	2.8	1	73 55 31.1	+ 19.56	2.8	1
361	ν Ursæ Majoris	. .	12 6.02	3.258	2.8	1	56 15 42.3	19.62	2.8	1
362	B. A. C. 3906	. .	23.6	4.544	. .	.	8 13 24.5	19.80	2.3	1
363	ξ Hydræ	. .	27 12.01	2.957	2.4	2	121 12 17.9	19.85	2.4	3
364	B. A. C. 3981	. .	39 48.99	3.205	2.4	1	41 33 58.3	19.98	2.3	2
365	B. A. C. 3981 (Ref.) .	. .	. . . . .	. .	. .	.	41 33 59.1	+ 19.98	2.3	1
366	π Virginis	. .	11 54 49.55	+ 3.076	2.4	3	82 43 40.5	20.05	2.4	3
367	ε Corvi	. .	12 4 3.50	3.082	2.4	3	111 57 49.3	20.05	2.4	3
368	B. A. C. 4123	. .	9 34.88	2.985	2.3	1	32 18 41.4	20.04	2.3	1
369	2^1 Canum Venaticorum .	. .	10 11.59	3.020	2.4	1	48 41 1.3	20.03	2.4	1
370	2^2 Canum Venaticorum .	. .	12 10 12.65	+ 3.020	2.4	1	48 40 59.8	+ 20.03	2.4	1
371	B. A. C. 4195	. .	21.1	3.005	. .	.	61 4 32.6	19.97	2.3	1
372	B. A. C. 4195 (Ref.) .	. .	. . . .	. .	. .	.	61 4 32.1	19.97	2.3	1
373	γ^1 Virginis	. .	35 40.76	3.075	2.4	3	90 48 5.0	19.81	2.4	3
374	γ^2 Virginis	. .	35 40.95	3.075	2.4	3	90 48 10.0	19.81	2.4	3
375	32^1 Camelopardalis . . .	. .	12 48 8.11	+ 0.393	2.4	2	5 56 25.6	+ 19.61	2.4	2
376	32^1 Camelopardalis, S. P.	. .	48 9.99	0.393	2.9	1	354 3 34.1	— 19.61	2.9	1
377	α^1 Canum Venaticorum .	7.0	50 29.13	2.836	2.5	5	51 2 52.0	+ 19.57	2.5	5
378	B. A. C. 4367	. .	12 56 18.07	3.006	2.3	1	78 24 22.6	19.45	2.3	1
379	θ^1 Virginis	8.3	13 3 50.32	3.104	2.4	4	94 54 23.9	19.28	2.4	4
380	20 Canum Venaticorum .	. .	13 12 15.07	+ 2.710	2.5	1	48 48 21.1	+ 19.07	2.5	1
381	m Virginis	. .	35 25.19	+ 3.149	2.4	1	98 6 25.7	18.34	2.4	1
382	B. A. C. 4643	. .	45.7	— 2.026	. .		6 39 21.1	17.96	2.4	1
383	B. A. C. 4643 (Ref.) .	. .	. . . .	. .	. .		6 39 20.0	17.96	2.4	1
384	Anonymous	9.7	51 0.96	+ 3.216	2.4	4	103 1 33.8	17.75	2.4	4

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			h. m. s.	s.			° ′ ″	″		
385	Anonymous	9.5	13 51 28.14	+ 3.216	2.4	1	102 58 31.0	+ 17.73	2.4	1
386	Anonymous	9.9	51 47.64	3.217	2.4	3	102 57 15.4	17.72	2.4	3
387	B. A. C. 4672	. .	13 55 38.56	3.048	2.4	2	87 53 1.7	17.55	2.4	2
388	*d* Bootis	. .	14 5.0	2.739	. .	.	64 20 55.2	17.14	2.4	4
389	*d* Bootis (Ref.)	. .	. . . . .	. .	. .	.	64 20 55.3	17.14	2.4	4
390	λ Bootis	. .	14 11 53.99	+ 2.302	2.7	3	43 22 10.1	+ 16.82	2.7	3
391	λ Virginis	. .	12 43.56	3.239	2.4	1	102 49.6	16.78	. .	.
392	Anonymous	. .	15 56.28	3.273	2.4	3	105 0 29.2	16.63	2.4	3
393	B. A. C. 4769	. .	18 8.17	2.988	2.4	4	83 38 29.2	16.52	2.4	4
394	B. A. C. 4773	. .	18 19.00	2.988	2.4	4	83 38 38.2	16.51	2.4	4
395	33 Bootis	. .	14 34 26.89	+ 2.241	2.4	3	45 5 7.5	+ 15.67	2.4	3
396	α^1 Libræ	5.5	44 9.60	3.316	2.4	3	105 30 21.4	15.13	2.4	3
397	Lalande (F.) 2545 . .	6.0	52 28.22	+ 1.979	2.4	4	39 53 18.9	14.64	2.4	4
398	B. A. C. 4982	. .	14 58 22.95	— 4.567	2.4	3	7 0 16.3	14.28	2.4	3
399	B. A. C. 4980	. .	15 1 31.49	+ 1.993	2.4	3	41 23 32.9	14.09	2.4	3
400	δ Bootis	3.8	15 10 44.78	+ 2.412	2.4	3	56 14 40.3	+ 13.50	2.4	3
401	Weisse (2) 213 . . .	8.0	10 53.03	2.411	2.4	3	56 14 19.2	13.49	2.4	3
402	μ^2 Bootis	6.8	20 3.34	2.279	2.4	2	52 14 17.6	12.89	2.4	2
403	β Coronæ Borealis . . .	. .	22 57.86	2.486	2.4	2	60 29 13.0	12.69	2.4	4
404	β Coronæ Borealis (Ref.)	. .	. . .	. .	. .	.	60 29 13.2	12.69	2.4	2
405	M. Z. 259, 15	6.0	15 31 24.77	+ 3.474	2.5	3	110 37 31.2	+ 12.11	2.5	3
406	B. A. C. 5216	. .	40 44.65	2.762	2.5	1	74 12 29.5	11.45	2.5	1
407	B. A. C. 5230	. .	43 27.78	3.132	2.4	3	93 4 5.1	11.25	2.4	3
408	B. A. C. 5284	. .	51 0.15	2.747	2.5	1	73 57 8.2	10.70	2.5	1
409	β^3 Scorpii	7.0	58 35.04	3.480	2.5	5	109 28 39.7	10.13	2.5	5
410	B. A. C. 5348	. .	15 59 40.91	+ 1.156	2.5	4	31 7 8.4	+ 10.05	2.5	4
411	B. A. C. 5348 (Ref.). .	. .	. . . .	. .	. .	.	31 7 9.0	10.05	2.5	2
412	B. A. C. 5358	. .	16 2 18.84	3.835	2.4	2	123 13 51.7	9.85	2.4	2
413	B. A. C. 5363	. .	3 15.24	4.080	2.4	3	130 48 22.4	9.78	2.4	3
414	φ Herculis	. .	5 3.27	1.890	2.5	3	44 45 18.3	9.64	2.5	4
415	φ Herculis (Ref.). . . .	. .	. . . .	. .	. .	.	44 45 19.0	+ 9.64	2.5	1
416	Radcliffe 3513 . . .	6.9	16 6 44.25	+ 1.171	2.4	5	31 45 15.4	9.51	2.4	5
417	σ^1 Coronæ Borealis . . .	7.5	10 15.51	2.267	2.5	2	55 50 33.4	9.24	2.5	2
418	σ Coronæ Borealis (*med.*)	. .	10 15.44	2.267	2.5	1	55 50 33.0	9.24	2.5	1
419	σ^2 Coronæ Borealis . . .	6.5	10 15.75	2.267	2.5	2	55 50 29.6	9.24	2.5	2
420	B. A. C. 5437	. .	16 12 4.70	+ 3.164	2.4	1	94 24.2	+ 9.10	. .	.
421	Gould Z. C. 1157 . .	. .	16 58.96	4.096	2.5	2	130 22 9.2	8.71	2.5	2
422	B. A. C. 5468	. .	17 35.04	3.801	2.4	3	121 8 48.8	8.67	2.4	3
423	Gould Z. C. 1206 . .	9.5	17 39.76	4.099	2.5	3	130 24 22.5	8.66	2.5	3
424	Gould Z. C. 1244 . .	. .	18 10.25	4.100	2.5	3	130 25 17.8	8.62	2.5	2

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425	B. A. C. 5471	. .	16 18 10.53	+ 3.810	2.5	3	121 25 48.0	+ 8.62	2.5	3
426	B. A. C. 5506	. .	23 29.60	3.898	2.3	1	124 4 28.4	8.20	2.3	1
427	B. A. C. 5508	. .	23 40.42	3.910	2.4	3	124 26 45.9	8.18	2.4	3
428	Lalande 30024[1] . . .	. .	23 41.16	2.660	2.5	2	71 20 14.0	8.18	2.5	2
429	Lalande 30024 (*med*) .	. .	23 41.28	2.660	2.4	1	71 20 15.0	8.18	2.4	1
430	Lalande 30024[2] . . .	. .	16 23 41.40	+ 2.660	2.5	2	71 20 14.6	+ 8.18	2.5	2
431	B. A. C. 5538	. .	28 36.88	3.935	2.3	1	125 0 41.2	7.79	2.3	1
432	Anonymous	11.4	30 18.27	3.437	2.4	3	106 28 5.8	7.65	2.4	3
433	B. A. C. 5557	. .	31 52.05	3.794	2.5	4	120 13 43.0	7.52	2.5	4
434	B. A. C. 5568	. .	32 44.64	1.748	2.5	1	43 8 50.4	7.45	2.5	1
435	17[1] Draconis	. .	16 33 26.66	+ 1.414	2.5	1	36 50 16.9	+ 7.39	2.5	1
436	17[2] Draconis	. .	33 27.10	1.414	2.5	1	36 50 18.6	7.39	2.5	1
437	Lalande 30353 . . .	. .	33 48.06	1.880	2.4	2	46 11 59.0	7.37	2.4	2
438	B. A. C. 5589	. .	36 1.93	3.822	2.5	3	121 0 5.1	7.18	2.5	3
439	B. A. C. 5593	. .	36 32.31	4.144	2.4	1	130 36 57.0	7.14	2.4	1
440	Anonymous	9.7	16 36 45.92	+ 3.382	2.5	4	103 54 55.9	+ 7.12	2.5	4
441	Anonymous	8.4	37 8.90	3.382	2.5	3	103 55 37.3	7.09	2.5	3
442	B. A. C. 5619	. .	39 30.51	2.218	2.5	3	55 44 34.7	6.90	2.5	3
443	B. A. C. 5629	. .	40 33.94	1.215	2.5	2	34 5 33.1	6.81	2.5	2
444	B. A. C. 5632	. .	42 31.30	3.925	2.5	2	124 4 39.3	6.65	2.5	2
445	B. A. C. 5635	. .	16 43 20.16	+ 4.171	2.5	3	131 1 34.4	+ 6.58	2.5	3
446	H. IV, 50	. .	43 40.40	1.682	2.5	1	42 15 45.3	6.56	2.5	1
447	B. A. C. 5638	. .	43 52.72	4.054	2.4	1	127 50 37.2	6.54	2.4	1
448	B. A. C. 5639	. .	44 16.14	4.153	2.5	3	130 31 14.1	6.51	2.5	3
449	B. A. C. 5640	. .	44 20.74	4.054	2.4	1	127 48 53.7	6.50	2.4	1
450	B. A. C. 5653	. .	16 45 30.72	+ 3.854	2.5	3	121 40 48.7	+ 6.40	2.5	3
451	B. A. C. 5665	. .	46 34.62	3.822	2.5	3	120 33 21.6	6.31	2.5	3
452	Stone 9178	. .	46 55.25	3.821	2.5	3	120 31 25.7	6.29	2.5	3
453	Lalande 30694 . . .	. .	47 2.00	3.068	2.6	2	89 46 49.6	6.28	2.6	2
454	B. A. C. 5671	6.7	47 4.33	3.817	2.5	1	120 23 30.8	6.27	2.5	1
455	B. A. C. 5675	8.5	16 47 31.42	+ 4.112	2.4	1	129 18 44.1	+ 6.24	2.4	1
456	Piazzi 218	. .	48 23.30	4.164	2.5	3	130 37 59.2	6.17	2.5	3
457	B. A. C. 5694	. .	49 19.98	3.873	2.6	2	122 8 50.1	6.09	2.6	2
458	B. A. C. 5696	. .	49 29.74	3.902	2.5	3	123 4 15.3	6.07	2.5	3
459	Weisse (2) 1513 . . .	. .	49 50.12	2.579	2.6	1	68 51 3.8	6.04	2.6	1
460	Piazzi 244	6.5	16 51 58.97	+ 3.408	2.5	2	104 41 10.9	+ 5.86	2.5	2
461	Weisse 958	. .	52 5.24	3.165	2.3	1	94 9 33.2	5.86	2.3	1
462	Anonymous	10.8	53 21.95	3.407	2.5	1	104 39 32.8	5.75	2.5	1
463	B. A. C. 5718	5.5	54 14.82	3.873	2.4	4	121 58 1.3	5.67	2.4	4
464	B. A. C. 5721	7.3	54 49.20	3.877	2.4	4	122 5 2.6	5.63	2.4	4

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465	XVI, 23	8.0	16 54 58.15	+ 4.029	2.5	1	126 41 19.2	+ 5.61	2.5	1
466	B. A. C. 5734	. .	55 10.29	0.601	2.5	1	27 26 55.6	5.60	2.5	1
467	Stone 9266	. .	55 41.88	3.858	2.6	2	121 26 34.5	5.56	2.6	2
468	B. A. C. 5729	. .	55 56.06	4.065	2.5	3	127 40 28.1	5.53	2.5	3
469	B. A. C. 5735	. .	57 3.63	3.939	2.5	3	123 57 19.7	5.44	2.5	3
470	B. A. C. 5753	. .	16 58 13.86	+ 2.756	2.4	2	76 13 34.4	+ 5.34	2.4	2
471	B. A. C. 5757	. .	58 32.22	2.757	2.4	2	76 15 42.6	5.31	2.4	2
472	Gould Z. C. 4182 . .	8.7	58 59.92	3.642	2.6	1	113 49 56.6	5.27	2.6	1
473	Weisse (2) 1790 . . .	. .	59 33.19	2.609	2.5	3	70 14 12.1	5.23	2.5	3
474	B. A. C. 5762	. .	17 0 9.38	3.846	2.5	3	120 55 2.6	5.18	2.5	3
475	Weisse (2) 1844 . . .	. .	17 1 18.54	+ 2.543	2.5	3	67 45 18.5	+ 5.08	2.5	3
476	O. Arg. N. 16802[1] . .	. .	1 42.46	0.855	2.6	1	30 15 34.0	5.05	2.6	1
477	O. Arg. N. 16802[2] . .	. .	1 43.64	0.854	2.6	1	30 15 26.6	5.04	2.6	1
478	η Ophiuchi	2.5	3 36.71	3.434	2.6	4	105 34 38.6	4.89	2.6	4
479	B. A. C. 5782	. .	4 7.32	4.136	2.4	2	129 21 26.7	4.84	2.4	2
480	B. A. C. 5793	. .	17 5 18.37	+ 3.893	2.5	3	122 17 38.7	+ 4.74	2.5	3
481	Anonymous	. .	6 28.46	3.634	2.5	1	113 21 31.2	4.64	2.5	1
482	B. A. C. 5804	. .	7 34.56	3.931	2.5	3	123 24 36.8	4.55	2.5	3
483	Lalande 31378 . . .	. .	7 48.62	1.372	2.6	2	37 26 46.8	4.53	2.6	2
484	B. A. C. 5807	. .	8 5.29	3.938	2.5	3	123 36 1.5	4.50	2.5	3
485	B. A. C. 5818	. .	17 9 21.44	+ 3.832	2.5	3	120 13 3.8	+ 4.40	2.5	3
486	B. A. C. 5817	5.7	9 23.16	3.904	2.3	2	122 31 42.2	4.39	2.3	2
487	Weisse 143	. .	10 32.51	3.042	2.5	3	88 39 23.9	4.29	2.5	3
488	B. A. C 5824	6.8	10 39.41	3.902	2.4	2	122 25 24.3	4.28	2.4	2
489	Weisse (2) 308 . . .	. .	12 50.62	2.661	2.5	3	72 33 16.8	4.10	2.5	3
490	Bonn VI + 53°, 1937	. .	17 19 12.44	+ 1.292	2.5	3	36 28 1.4	+ 3.55	2.5	3
491	Weisse (2) 516 . . .	. .	19 14.43	2.685	2.5	2	73 35 21.5	3.55	2.5	2
492	B. A. C. 5893	. .	20 39.65	2.974	2.6	1	85 45 21.1	3.42	2.6	1
493	B. A. C. 5893 (Ref.) .	. .	. . .	. .	. .	.	85 45 19.8	3.42	2.6	1
494	B. A. C. 5891	. .	20 57.07	4.054	2.5	3	126 40 40.7	3.40	2.5	3
495	Anonymous	10.1	17 22 8.01	+ 3.866	2.5	2	121 3 9.9	+ 3.30	2.5	2
496	D. M. — 0°, 3298 . .	7.8	23 59.95	3.094	2.5	3	90 56 37.5	3.14	2.5	3
497	B. A. C. 5910	5.0	24 19.33	3.095	2.5	3	90 57 49.8	3.11	2.5	3
498	Taylor 8095	. .	24 48.28	4.224	2.5	3	131 5 4.0	3.07	2.5	3
499	B. A. C. 5914	. .	25 21.76	3.930	2.5	3	122 58 10.2	3.02	2.5	3
500	B. A. C. 5925	. .	17 26 59.94	+ 3.915	2.5	3	122 29 53.5	+ 2.88	2.5	3
501	Weisse (2) 813 . . .	. .	28 15.15	2.608	2.5	3	70 39 24.6	2.77	2.5	3
502	Lalande 32614 . . .	. .	28 22.68	2.683	2.6	4	73 35 51.5	2.76	2.6	4
503	B. A. C. 5950	. .	29 51.28	1.162	2.5	2	34 44 4.8	2.63	2.5	2
504	B. A. C. 5951	. .	29 56.74	1.162	2.5	2	34 44 46.0	2.62	2.5	2

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			h. m. s.	s.			° ′ ″	″		
505	B. A. C. 5972	. .	17 32 26.39	− 0.248	2.5	3	21 47 22.7	+ 2.41	2.5	3
506	B. A. C. 5970	. .	34 19.54	+ 4.147	2.5	3	128 58 3.3	2.24	2.5	3
507	B. A. C. 5974	5.5	34 50.38	4.069	2.4	1	126 53 5.3	2.20	2.4	1
508	B. A. C. 5980	. .	35 51.93	3.923	2.5	3	122 36 16.4	2.11	2.5	3
509	B. A. C. 5983	. .	35 56.33	3.844	2.6	1	120 7.1	2.10	. .	.
510	ι Herculis	. .	17 36 8.22	+ 1.692	2.9	2	43 55 49.4	+ 2.08	2.9	2
511	B. A. C. 5991	. .	36 40.86	2.691	2.6	2	73 59 31.9	2.04	2.6	2
512	Bonn VI. + 14°, 3321	6.3	37 59.41	2.732	2.5	3	75 39 1.6	1.92	2.5	3
513	Lalande 32455 . . .	. .	38 39.64	1.376	2.6	2	38 7 27.4	1.86	2.6	2
514	Lalande 32408 . . .	5.8	38 54.93	2.729	2.5	3	75 32 16.3	1.84	2.5	3
515	B. A. C. 6004	. .	17 39 19.94	+ 4.193	2.5	3	130 4 47.5	+ 1.81	2.5	3
516	O. Arg. N. 17464 . .	. .	39 23.29	− 1.155	2.6	3	17 28 56.2	1.80	2.6	3
517	XVII, 17	6.2	40 37.90	+ 3.622	2.6	1	112 25 54.9	1.69	2.6	1
518	B. A. C. 6016	. .	41 30.56	3.894	2.5	1	121 39 39.3	1.62	2.5	1
519	B. A. C. 6019	. .	41 55.95	4.193	2.5	3	130 3 3.0	1.58	2.5	3
520	Weisse (2) 1334 . . .	. .	17 41 57.95	+ 1.996	2.5	1	51 4 18.1	+ 1.58	2.5	1
521	Bonn VI. + 20°, 3570	. .	43 20.98	+ 2.571	2.6	1	69 23 38.4	+ 1.46	2.6	1
522	ψ⁸ Draconis, S. P. . . .	. .	44 4.43	− 1.085	2.2	1	342 12 52.1	− 1.39	2.2	1
523	B. A. C. 6029	. .	44 21.33	+ 3.998	2.5	1	124 45 56.0	+ 1.37	2.5	1
524	B. A. C. 6031	. .	44 29.19	3.985	2.5	3	124 23 0.9	1.36	2.5	3
525	B. A. C. 6032	. .	17 44 38.71	+ 3.883	2.6	1	121 17 41.7	+ 1.34	2.6	1
526	B. A. C. 6037	. .	45 27.57	3.996	2.5	1	124 41 59.7	1.27	2.5	1
527	Weisse (2) 1438 . . .	. .	45 48.44	2.322	2.5	3	60 38 44.3	1.24	2.5	3
528	O. Arg. S. 17316 . .	. .	46 12.46	3.812	2.6	1	118 59 0.8	1.21	2.6	1
529	B. A. C. 6046	. .	46 36.31	3.988	2.5	3	124 26 23.0	1.17	2.5	3
530	Weisse 912	. .	17 46 36.63	+ 3.041	2.6	3	88 39 53.1	+ 1.17	2.6	3
531	Lalande 32707 . . .	. .	47 29.37	2.929	2.5	1	83 52 23.9	1.09	2.5	1
532	B. A. C. 6057	. .	48 33.05	3.921	2.5	3	122 27 10.8	1.00	2.5	3
533	B. A. C. 6058	. .	49 6.19	3.929	2.5	3	122 40 8.1	0.95	2.5	3
534	Weisse (2) 1591 . . .	. .	50 53.40	2.520	2.5	1	67 30 59.7	0.80	2.5	1
535	M. Z. 27, 51	. .	17 51 28.23	+ 3.810	2.6	1	118 53 15.9	+ 0.75	2.6	1
536	Lacaille 7520	. .	52 7.10	4.164	2.5	1	129 14 8.8	0.69	2.5	1
537	B. A. C. 6076	. .	52 9.74	3.953	2.5	3	123 23 48.4	0.69	2.5	3
538	B. A. C. 6095 . . .	. .	54 23.33	1.807	2.5	3	46 34 18.7	0.49	2.5	3
539	Weisse (2) 1764 . . .	. .	56 17.05	2.197	2.5	3	56 46 52.6	0.33	2.5	3
540	Weisse (2) 1797 . . .	. .	17 57 16.66	+ 2.194	2.5	3	56 41 17.5	+ 0.24	2.5	3
541	B. A. C. 6131	8.0	18 1 21.08	3.881	2.5	2	121 10 28.8	− 0.12	2.5	2
542	Weisse (2) 1941 . . .	. .	1 26.24	2.230	2.5	2	57 46 44.9	0.13	2.5	2
543	B. A. C. 6139	. .	2 16.03	3.932	2.6	2	122 43 56.9	0.20	2.6	2
544	B. A. C. 6144	. .	2 21.16	3.913	2.5	3	122 9 41.3	0.21	2.6	2

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545	B. A. C. 6145, S . . .	. .	18 2 29.25	+ 3.868	2.7	1	120 44 47.2	— 0.22	2.7	1
546	B. A. C. 6150	. .	2.9	2.340	. .	.	61 15 9.9	0.25	2.5	2
547	B. A. C. 6150 (Ref.) .	. .	. . .	. .	. .	.	61 15 10.0	0.25	2.5	2
548	Weisse (2) 44	7.5	2 59.73	2.087	2.5	3	53 35 37.9	0.26	2.5	2
549	Weisse (2) 76	5.5	3 56.70	2.087	2.5	3	53 36 36.2	0.34	2.5	3
550	Weisse 46	. .	18 4 46.59	+ 2.995	2.6	3	86 41 52.0	— 0.42	2.6	3
551	Lalande 33412 . . .	. .	4 52.65	2.678	2.6	2	73 32 41.3	0.43	2.6	2
552	Weisse (2) 137 . . .	6.3	5 52.61	2.086	2.5	3	53 33 25.3	0.51	2.5	3
553	B. A. C. 6166	. .	5 56.25	3.907	2.5	1	121 59 43.5	0.52	2.5	1
554	B. A. C. 6174	. .	7 51.28	4.065	2.6	1	126 36 30.8	0.69	2.6	1
555	B. A. C. 6181	. .	18 8 32.88	+ 3.881	2.6	2	121 11 40.5	— 0.75	2.6	2
556	B. A. C. 6182	. .	8 40.15	3.886	2.5	3	121 21 23.0	0.76	2.5	3
557	B. A. C. 6188	. .	9 37.61	3.886	2.5	3	121 20 8.6	0.84	2.5	3
558	B. A. C. 6186	. .	9 38.61	4.072	2.6	1	126 47 43.6	0.84	2.6	1
559	B. A. C. 6192	. .	10 4.42	3.954	2.6	2	123 26 10.4	0.88	2.6	2
560	XVIII, 8	8.2	18 12 11.26	+ 4.205	2.5	1	130 19 12.2	— 1.07	2.5	1
561	XVIII, 9	7.5	12 44.51	3.649	2.5	1	113 21 42.9	1.11	2.5	1
562	B. A. C. 6204	. .	13 9.49	3.952	2.6	1	123 22 25.3	1.15	2.6	2
563	Anonymous	. .	13 39.16	3.461	2.5	1	106 14 57.3	1.19	2.5	1
564	B. A. C. 6211	. .	13 39.35	3.874	2.5	1	120 59 26.5	1.19	2.5	1
565	Anonymous	. .	18 13 47.11	+ 3.461	2.5	1	106 13 45.4	— 1.20	2.5	1
566	B. A. C. 6221	. .	14 53.42	4.068	2.6	1	126 43 23.8	1.30	2.6	1
567	Anonymous	9.5	15 6.28	3.486	2.5	1	107 14 11.6	1.32	2.5	1
568	B. A. C. 6231	. .	15 18.32	2.536	2.6	3	68 5 15.4	1.34	2.6	3
569	B. A. C. 6226	. .	15 30.82	4.052	2.6	2	126 17 38.9	1.36	2.6	2
570	XVIII, 10	. .	18 16 1,72	+ 3.768	2.6	1	117 33 32.5	— 1.40	2.6	1
571	Lalande 33895 . . .	. .	17 5.94	2.790	2.6	3	78 1 38.1	1.49	2.6	3
572	B. A. C. 6239	. .	17 26.37	3.868	2.5	1	120 48 54.4	1.52	2.5	1
573	B. A. C. 6252	. .	18 9.90	1.503	2.6	1	40 19 53.7	1.59	2.6	1
574	B. A. C. 6244	. .	18 14.76	3.899	2.5	3	121 49 4.6	1.59	2.5	3
575	B. A. C. 6249	6.7	18 19 5.97	+ 3.856	2.6	3	120 27 25.4	— 1.67	2.6	3
576	B. A. C. 6254	. .	19 45.25	3.953	2.5	2	123 28 44.8	1.73	2.5	2
577	B. A. C. 6256	. .	19 56.54	3.892	2.6	1	121 35 57.5	1.74	2.6	1
578	B. A. C. 6259	. .	20 17.28	4.153	2.6	3	129 3 51.9	1.77	2.6	3
579	Gould Z. C. 1243 . .	. .	20 24.57	+ 3.893	2.6	1	121 38 11.4	1.78	2.6	1
580	B. A. C. 6288	. .	18 20 56.49	— 0.897	2.5	1	18 32 29.0	— 1.83	2.5	1
581	O. Arg. S. 18261 . . .	8.6	21 36.07	+ 3.741	2.6	1	116 39 57.6	1.89	2.6	1
582	O. Arg. S. 18262 . . .	7.5	21 36.21	3.741	2.6	1	116 39 15.4	1.89	2.6	1
583	Gould Z. C. 1335 . .	8.5	21 56.05	3.956	2.5	1	123 34 55.5	1.92	2.5	1
584	B. A. C. 6289	. .	22 11.35	0.881	2.5	1	31 16 2.9	1.94	2.5	1

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			h. m. s.	s.			° ′ ″	″		
585	B. A. C. 6289 (Ref.)	. .	. . .	. .	. .	.	31 16 1.5	— 1.94	2.5	1
586	B. A. C. 6274	. .	18 22 15.47	+ 3.955	2.5	1	123 34 14.1	1.94	2.5	1
587	B. A. C. 6275	. .	22 16.72	3.940	2.5	1	123 7 19.6	1.94	2.5	1
588	B. A. C. 6302	. .	23 11.13	1.846	2.8	3	17 19 6.6	2.03	2.8	3
589	B. A. C. 6285	. .	23 20.32	3.938	2.5	1	123 3 54.9	2.04	2.5	1
590	Piazzi 87	. .	18 24 39.26	+ 3.936	2.5	1	123 1 13.5	— 2.15	2.5	1
591	Weisse (2) 703	. .	25 49.52	2.670	2.6	3	73 9 6.8	2.25	2.6	3
592	B. A. C. 6305	. .	26 13.25	3.938	2.5	1	123 6 9.3	2.29	2.5	1
593	B. A. C. 6308	. .	26 20.77	3.936	2.5	1	123 2 52.5	2.30	2.5	1
594	Anonymous	10.9	26 28.15	4.109	2.6	3	127 58 25.1	2.31	2.6	3
595	Tr. Z. 27, 44	8.0	18 27 18.64	+ 4.109	2.5	3	127 59 50.4	— 2.38	2.5	3
596	B. A. C. 6317	. .	27 42.59	3.934	2,5	1	122 58 51.0	2.42	2.5	1
597	Anonymous	10.0	27 49.06	4.108	2.5	2	127 58 35.4	2.43	2.5	2
598	Weisse (2) 794	. .	28 19.34	2.292	2.6	1	59 32 1.3	2.47	2.6	1
599	B. A. C. 6334	. .	30 36.91	3.926	2.7	3	122 46 49.6	2.67	2.7	3
600	Weisse 710	. .	18 30 50.11	+ 2.862	2.5	3	80 58 9.6	— 2.69	2.5	3
601	Lalande 34486	. .	30 54.76	2.920	2.7	1	83 25 12.2	2.70	2.7	1
602	Lalande 34499	. .	31 32.20	3.082	2.6	3	90 24 26.8	2.75	2.6	3
603	B. A. C. 6344	. .	31 46.26	3.936	2.5	1	123 5 45.5	2.77	2.5	1
604	Weisse (2) 934	. .	32 17.69	2.201	2.7	3	56 37 46.1	2.82	2.7	3
605	M. Z. 45, 21	9.5	18 33 10.33	+ 3.766	2.6	2	117 38 49.0	— 2.89	2.6	2
606	O. Arg. S. 18537	. .	34 23.95	3.762	2.6	1	117 33 13.0	3.00	2.6	1
607	B. A. C. 6375	. .	35 26.76	2.863	2.7	2	12 32 45.4	3.09	2.7	2
608	B. A. C. 6359	. .	35 41.24	4.121	2.5	2	128 26 8.8	3.11	2.5	2
609	B. A. C. 6364	. .	35 44.88	1.931	2.5	3	49 10 20.4	3.11	2.5	3
610	O. Arg. S. 18605	7.5	18 37 24.86	+ 3.701	2.6	2	115 29 9.7	— 3.26	2.6	2
611	B. A. C. 6417	. .	38 52.60	— 8.118	2.5	2	6 43 13.8	3.31	2.5	2
612	Anonymous	. .	40 22.49	+ 1.211	2.7	1	35 15 57.2	3.51	2.7	1
613	Weisse (2) 1218	. .	41 19.28	2.416	2.7	1	63 27 47.3	3.60	2.7	1
614	B. A. C. 6389	. .	41 20.91	3.921	2.6	3	122 50 21.6	3.60	2.6	3
615	O. Arg. N. 18618	. .	18 42 32.50	+ 1.212	2.6	3	35 13 39.0	— 3.70	2.6	3
616	Lamont 77	. .	42 54.76	3.793	2.7	1	118 44 26.5	3.73	2.7	1
617	Weisse (2) 1314	. .	44 23.55	2.463	2.6	1	65 5 11.9	3.86	2.6	1
618	B. A. C. 6414	. .	45 7.10	3.856	2.6	2	120 52 22.7	3.92	2.6	2
619	Lalande 35150	. .	46 37.29	2.750	2.8	2	76 10 29.2	4.05	2.8	2
620	B. A. C. 6438	. .	18 47.2	+ 2.563	. .	.	68 42 58.8	— 4.10	2.6	1
621	B. A. C. 6438 (Ref.)	. .	. . .	. .	. .	.	68 42 59.6	4.10	2.6	1
622	B. A. C. 6435	. .	47 22.96	4.078	2.5	3	127 31 59.9	4.12	2.5	3
623	B. A. C. 6444	. .	48 40.27	4.075	2.5	3	127 29 33.9	4.23	2.5	3
624	Anonymous	10.0	49 13.35	3.795	2.5	2	118 57 15.4	4.27	2.5	2

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			h. m. s.	s.			° ′ ″	″		
625	B. A. C. 6470	. .	18 50 18.26	+ 1.486	2.7	1	39 26 18.9	— 4.37	2.7	1
626	B. A. C. 6455	. .	50 31.96	3.856	2.6	3	120 58 44.0	4.38	2.6	3
627	B. A. C. 6458	. .	50 45.74	4.064	2.7	3	127 15 35.6	4.40	2.7	3
628	B. A. C. 6459	. .	50 46.56	3.862	2.6	2	121 11 22.3	4.41	2.6	2
629	M. Z. 47, 23	9.0	50 46.90	3.793	2.5	2	118 54 27.8	4.41	2.5	2
630	Weisse (2) 1528 . . .	. .	18 50 53.80	+ 2.650	2.7	3	72 2 28.8	— 4.42	2.7	3
631	B. A. C. 6491	. .	54 31.73	2.244	2.1	2	57 28 17.8	4.73	2.1	2
632	O. Arg. N. 18836 . .	. .	55 54.25	0.278	2.5	3	24 54 2.1	4.84	2.5	3
633	D. M. + 20°, 4021 . .	8.8	56 13.45	2.583	2.5	3	69 20 16.2	4.87	2.5	3
634	Bonn VI + 20°, 4022 .	6.2	56 17.59	2.583	2.5	4	69 20 1.6	4.88	2.5	4
635	B. A. C. 6499	. .	18 56 50.38	+ 3.858	2.6	2	121 13 6.8	— 4.92	2.6	2
636	Lalande 35560 . . .	. .	56 52.29	3.036	2.7	3	88 23 51.2	4.92	2.7	3
637	O. Arg. N. 18838 . .	. .	57 15.69	1.508	2.6	3	39 38 0.2	4.96	2.6	3
638	Lalande 35598 . . .	5.5	57 34.02	3.035	2.8	2	88 21 2.2	4.98	2.8	2
639	Weisse (2) 1757 . . .	. .	57 44.03	2.614	2.6	3	70 30 35.2	5.00	2.6	3
640	B. A. C. 6520	. .	18 58 6.06	+ 1.696	2.5	2	43 13 55.4	— 5.03	2.5	2
641	B. A. C. 6522	. .	58 23.41	1.191	2.8	1	34 30.7	5.05	. .	.
642	B. A. C. 6511	. .	58 26.38	4.056	2.7	6	127 13 54.0	5.06	2.7	6
643	B. A. C. 6530	. .	18 59 20.62	1.413	2.5	3	37 54 36.6	5.13	2.5	3
644	B. A. C. 6535	. .	19 1 26.60	4.083	2.6	3	128 5 12.0	5.31	2.6	3
645	B. A. C. 6541	. .	19 1 54.68	+ 4.136	2.6	3	129 31 36.8	— 5.35	2.6	3
646	Lalande 36268[2] . . .	5.8	11 2.62	2.747	2.6	3	75 39 48.4	6.12	2.6	3
647	B. A. C. 6603	. .	12 14.69	1.565	2.6	3	40 8 13.9	6.22	2.6	3
648	B. A. C. 6599	. .	12 16.45	2.082	2.6	3	52 4 32.6	6.22	2.6	3
649	B. A. C. 6594	. .	12 50.78	3.867	2.5	2	122 2 2.1	6.27	2.5	2
650	Lalande 36409 . . .	. .	19 13 18.18	+ 1.617	2.5	1	51 5 24.1	— 6.30	2.5	1
651	ρ^1 Sagittarii	. .	14 49.72	3.486	2.7	3	108 4 4.6	6.43	2.7	3
652	ρ^2 Sagittarii	. .	14 57.90	3.497	2.7	3	108 31 33.8	6.44	2.7	3
653	B. A. C. 6622	. .	15 42.42	4.166	2.5	1	130 50 14.2	6.50	2.5	1
654	B. A. C. 6640	. .	18 6.28	1.100	2.6	2	32 34 40.0	6.70	2.6	2
655	Lalande 36715 . . .	. .	19 20 55.06	+ 2.788	2.6	4	77 12 46.2	— 6.93	2.6	3
656	B. A. C. 6690	. .	25 57.76	2.419	2.1	1	62 17 14.6	7.35	2.4	3
657	B. A. C. 6690 (Ref.). .	. .	. . .	. .	. .	.	62 17 13.6	7.35	2.5	2
658	D. M. + 57°, 2013 . .	. .	27.5	1.108	. .	.	32 16 47.7	7.47	2.6	1
659	D. M. + 57°, 2013 (Ref.)	. .	. . .	. .	. .	.	32 16 48.4	7.47	2.6	1
660	B. A. C. 6711	. .	19 29 29.89	+ 2.089	2.5	3	51 29 39.5	— 7.63	2.5	3
661	Anonymous	7.2	29 56.76	3.499	2.7	2	109 2 39.1	7.67	2.7	2
662	Weisse 728	. .	30 4.62	+ 2.733	2.7	3	74 38 53.5	7.68	2.7	3
663	Lalande 3268	. .	30 10.44	— 7.329	2.8	3	6 46 9.6	7.69	2.8	3
664	Anonymous	7.5	30 21.16	+ 3.497	2.7	2	108 59 47.2	7.70	2.7	2

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			h. m. s.	s.			° ′ ″	″		
665	Anonymous	10.0	19 30 51.57	+ 3.693	2.7	1	116 41 39.9	— 7.74	2.7	1
666	B. A. C. 6720	. .	31 0.22	1.895	2.8	1	46 18 47.4	7.75	2.8	2
667	Anonymous	9.0	31 11.08	3.690	2.7	1	116 37 38.0*	7.77	2.7	1
668	B. A. C. 6723	. .	31 16.58	1.552	2.8	2	39 0 57.9	7.78	2.8	2
669	Groombridge 2884 . .	. .	32 7.51	2.014	2.8	1	49 17 44.0	7.84	2.8	1
670	Lalande 37303 . . .	. .	19 32 39.51	+ 2.015	2.7	1	49 17 49.8	— 7.89	2.7	1
671	B. A. C. 6728	. .	32 47.29	1.909	2.6	2	46 33 27.6	7.90	2.6	2
672	B. A. C. 6737	. .	33 31.39	0.646	2.7	1	26 49 42.5	7.96	2.7	1
673	Rümker 7771	. .	33 48.36	0.641	2.7	1	26 46 18.9	7.98	2.7	1
674	Anonymous	10.6	36 22.73	3.184	2.6	3	95 14 58.2	8.19	2.6	3
675	B. A. C. 6753	. .	19 37 55.91	+ 3.809	2.5	2	121 11 5.2	— 8.31	2.5	2
676	Σ (P. M.) 2355[1] . . .	. .	41 4.41	2.277	2.8	3	56 40 11.2	8.56	2.8	3
677	Σ (P. M.) 2355[2] . . .	. .	41 4.67	2.277	2.8	3	56 40 13.2	8.56	2.8	3
678	δ Cygni	. .	41 17.26	1.870	2.7	2	45 9 23.9	8.58	2.5	3
679	δ Cygni (Ref.).	. .	. . .	. .	. .	.	45 9 24.1	8.58	2.5	1
680	17[1] Cygni	. .	19 41 56.89	+ 2.275	2.7	3	56 32 46.0	— 8.63	2.7	3
681	17[2] Cygni	. .	41 58.88	2.275	2.7	3	56 32 37.7	8.63	2.7	3
682	O. Arg. S. 20008 . . .	. .	44 25.22	3.694	2.8	1	117 22 48.3	8.82	2.8	1
683	χ Cygni	Var.	46 1.88	2.307	2.8	1	57 23 1.6	8.95	2.8	1
684	Weisse (2) 1501 . . .	. .	47 3.66	2.524	2.7	1	65 18 36.0	9.03	2.7	1
685	B. A. C. 6816	. .	19 47 31.27	+ 3.867	2.8	3	123 21 12.1	— 9.07	2.8	3
686	O. Arg. N. 19720 . .	. .	48 25.71	1.809	2.7	1	43 16 34.8	9.14	2.7	1
687	B. A. C. 6830	. .	48 38.64	1.768	2.8	2	42 22 20.9	9.15	2.8	2
688	B. A. C. 6843	. .	52 3.29	3.918	2.7	3	125 35 38.4	9.42	2.7	3
689	B. A. C. 6858	. .	53 30.57	2.663	2.9	1	70 49 39.6	9.53	2.9	1
690	B. A. C. 6865	. .	19 53 31.59	+ 1.641	2.7	1	39 24 53.2	— 9.53	2.7	1
691	B. A. C. 6867	. .	53 40.39	1.151	2.8	3	31 28 7.8	9.54	2.8	3
692	Weisse (2) 1739 . . .	. .	53 57.18	2.376	2.8	1	59 20 8.4	9.56	2.8	1
693	Anonymous	12.0	57 44.70	3.337	2.8	2	102 48 25.6	9.85	2.8	3
694	B. A. C. 6886	. .	19 58 0.42	3.838	2.7	4	123 19 57.1	9.87	2.7	3
695	B. A. C. 6905	. .	20 0 13.54	+ 0.648	2.9	1	25 30 33.5	— 10.04	2.9	1
696	B. A. C. 6905, S. P . .	. .	0 13.62	0.648	2.9	1	334 29 25.3	+ 10.04	2.9	1
697	B. A. C. 6922	. .	3 26.71	3.919	2.7	3	126 23 48.2	— 10.29	2.7	3
698	31 Cygni	. .	9 55.06	1.889	2.8	2	43 36 57.1	10.77	2.7	2
699	31 Cygni (Ref.).	. .	. . .	. .	. .	.	43 36 59.7	10.77	2.7	1
700	Piazzi 63	. .	20 9 56.16	+ 1.890	2.8	1	43 38 44.1	— 10.77	2.8	1
701	B. A. C. 7029	. .	19.1	+ 2.391	. .	.	58 11 24.8	11.44	2.7	3
702	B. A. C. 7029 (Ref.). .	. .	. . .	. .	. .	.	58 11 24.5	11.44	2.7	3
703	B. A. C. 7230	. .	40 45.54	— 5.511	2.6	1	6 47 7.1	12.94	2.6	1
704	ε Cygni	. .	41 26.18	+ 2.397	2.2	2	56 28 16.8	12.99	2.4	3

* Possibly one revolution too small.

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			h. m. s.	s.			° ′ ″	″		
705	ε Cygni (Ref.)	. .	. . . .	. .	. .	.	56 28 15.1	— 12.99	2.8	1
706	B. A. C, 7256	. .	20 49.5	+ 2.456	. .	.	62 23 25.3	13.52	2.8	3
707	B. A. C. 7256 (Ref.)	. .	. . . .	. .	. .	.	62 23 25.8	13.52	2.8	3
708	B. A. C. 7345	. .	21 2 32.45	2.064	2.7	1	42 49 21.6	14.34	2.7	1
709	τ Cygni	. .	10 4.99	2.379	2.8	2	52 27 27.4	14.79	2.8	2
710	ζ Capricorni	. .	21 19 55.70	+ 3.436	2.8	2	112 55 17.2	— 15.36	2.8	2
711	16 Pegasi	. .	47.7	2.726	. .	.	64 37 46.8	16.80	2.6	1
712	16 Pegasi (Ref.)	. .	. . . .	. .	. .	.	64 37 46.6	16.80	2.6	1
713	π^1 Pegasi	. .	22 4 0.00	2.658	2.9	1	57 24 14.3	17.54	2.9	1
714	π^2 Pegasi	. .	4 44.76	2.660	2.6	2	57 24 2.4	17.57	2.6	2
715	γ Aquarii	. .	22 15 33.68	+ 3.093	2.7	2	91 58 53.5	— 18.01	2.7	2
716	Groombridge 3756	. .	16 54.79	0.759	2.7	3	14 6 17.5	18.06	2.7	3
717	B. A. C. 7855	. .	26 26.02	2.447	2.9	1	40 19 25.8	18.41	2.9	1
718	B. A. C. 7923	. .	37.5	2.805	. .	.	60 23 44.3	18.77	2.6	1
719	B. A. C. 7923 (Ref.)	. .	. . . .	. .	. .	.	60 23 44.0	18.77	2.6	1
720	λ Pegasi	. .	22 40 50.91	+ 2.881	2.8	1	67 3 17.9	— 18.87	2.9	1
721	74 Aquarii	. .	47 15.88	3.163	2.8	10	102 14 37.2	19.05	2.8	10
722	Weisse 966	. .	47 53.67	3.166	2.9	10	102 48 59.2	19.07	2.9	10
723	Weisse 1047	. .	51 55.38	3.154	2.8	10	101 45 44.9	19.18	2.8	10
724	Weisse 1079	. .	53 22.78	3.166	2.8	11	103 42 10.9	19.21	2.8	11
725	Weisse 1156	. .	22 56 21.30	+ 3.150	2.8	12	101 53 58.2	— 19.29	2.8	12
726	Weisse 1204	. .	58 18.70	3.153	2.8	10	102 48 51.9	19.33	2.8	10
727	Anonymous	. .	59 19.10	3.147	2.7	1	102 3 34.6	19.35	2.7	1
728	Weisse 1232	. .	59 43.53	3.140	2.9	10	101 4 27.1	19.36	2.9	10
729	Weisse 1249	. .	23 0 47.38	3.154	2.9	9	103 21 50.8	19.39	2.9	9
730	Weisse 1261	. .	23 1 13.62	+ 3.147	2.9	9	102 26 39.0	— 19.40	2.9	10
731	Weisse 49	. .	5 19.63	3.135	2.8	10	101 8 54.5	19.49	2.8	10
732	Weisse 57^1	. .	5 49.08	3.142	2.8	11	102 34 23.7	19.50	2.8	11
733	Weisse 57^2	. .	5 49.39	3.142	2.8	11	102 34 24.8	19.50	2.8	11
734	Weisse 123	. .	8 31.12	3.132	2.9	10	101 19 47.9	19.55	2.9	10
735	Lalande 45504	. .	23 9 11.51	+ 3.136	2.9	10	102 12 27.2	— 19.56	2.9	10
736	ψ Aquarii	. .	9 42.57	3.122	2.9	10	99 43 50.0	19.57	2.9	10
737	Weisse 185	. .	11 30.45	3.134	2.8	10	102 21 26.0	19.61	2.8	10
738	Weisse 226	. .	12 49.38	3.122	2.9	10	100 15 20.5	19.63	2.9	10
739	Weisse 228	. .	12 52.68	3.134	2.9	9	102 48 55.3	19.63	2.9	9
740	Weisse 265	. .	23 14 44.25	+ 3.124	2.8	10	101 10 41.3	— 19.66	2.8	10
741	Weisse 309	. .	16 53.25	3.123	2.8	10	101 25 11.1	19.70	2.8	10
742	Weisse 315	. .	17 9.98	3.116	2.9	10	100 1 54.7	19.70	2.9	10
743	Weisse 377	. .	20 28.90	3.116	2.8	10	100 40 58.8	19.76	2.8	10
744	Weisse 402	. .	21 56.74	3.120	2.9	10	102 5 54.5	19.78	2.9	10

Number.	Name of Star.	Magnitude.	Mean Right Ascension, 1882.0.	Annual Precession, 1882.0.	Mean year.	No. of obs.	Mean N. P. Distance, 1882.0.	Annual Precession, 1882.0.	Mean year.	No. of obs.
			h. m. s.	s.			° ′ ″	″		
745	Weisse 427	. .	23 22 54.42	+ 3.110	2.9	10	99 54 54.4	— 19.79	2.9	10
746	Weisse 488	. .	25 49.23	3.113	2.6	1	101 38 42.1	19.83	2.6	1
747	Weisse 497	. .	26 18.96	3.113	2.8	10	101 39 0.3	19.84	2.8	10
748	Weisse 571	. .	29 21.27	3.108	2.9	11	101 12 25.5	19.87	2.9	11
749	Weisse 586	. .	29 54.78	3.101	2.8	10	99 25 3.3	19.88	2.8	10
750	Weisse 629	. .	23 32 6.78	+ 3.099	2.8	10	99 16 48.8	— 19.91	2.8	10
751	106 Aquarii	. .	38 4.80	3.116	2.8	2	108 55 53.7	19.96	2.8	2
752	δ Sculptoris	. .	42 46.67	3.127	2.8	3	118 46 58.4	20.00	2.8	3

RIGHT ASCENSIONS, NORTH-POLAR DISTANCES, AND SEMI-DIAMETERS

OF THE

SUN, MOON, AND PLANETS,

DEDUCED FROM

OBSERVATIONS WITH THE TRANSIT CIRCLE

AND

COMPARED WITH THE TABLES.

1882.

RIGHT ASCENSIONS, NORTH-POLAR DISTANCES, AND SEMI-DIAMETERS

OF THE

SUN, MOON, AND PLANETS.

SUN.

Date.	Observer.	Limb.	Apparent Right Ascension of Center.	Corr'n to Am. Eph.	Sidereal time of Transit of Semi-diameter.	Corr'n to Am. Eph.	Limb.	Geocentric N. P. Distance of Center.	Corr'n to Am. Eph.	Vertical Semi-diameter.	Corr'n to Am. Eph.
1882.			h. m. s.	s.	m. s.	s.		° ′ ″	″	′ ″	″
Jan. 23	E.	.	20 23 57.29	− 0.08	1 (9.30)	+ (0.06)	.	109 21 . .	. .	. . .	. .
27	E.	.	20 40 36.78	− 0.16	1 8.70	−0.10	.	108 20 43.7	+ 1.2	16 14.1	− 2.5
30.	W.	.	20 52 58.01	+ 0.15	1 8.36	−0.09	.	107 32 19.3	− 0.9	16 15.3	− 0.9
Feb. 1	S.	.	21 1 7.77	+ 0.13	1 8.12	− 0.10	.	106 58 31.7	− 0.2	16 14.0	− 2.0
2	R.	.	21 5 11.31	+ 0.03	1 8.08	− 0.03	.	106 41 12.4	+ 1.6	16 16.8	+ 1.0
6	R.	.	21 21 17.55	− 0.10	1 7.57	− 0.08	.	105 28 53.4	− 3.0	16 15.0	− 0.1
7	W.	.	21 25 17.20	− 0.03	1 7.44	− 0.09	.	105 10 12.2	+ 0.1	16 14.8	− 0.2
10	R.	.	21 37 11.23	− 0.07	1 7.10	− 0.10	.	104 12 25.7	− 2.6	16 14.0	− 0.4
11	W.	.	21 41 7.51	− 0.29	1 6.98	− 0.11	.	103 52 46.1	+ 1.3	16 13.0	− 1.2
15	W.	.	21 56 46.47	+ 0.06	1 6.60	− 0.04	.	102 31 36.2	− 0.7	16 13.2	− 0.2
17	S.	.	22 4 31.53	+ 0.15	1 6.33	− 0.12	.	101 49 50.9	+ 1.9	16 10.8	− 2.2
18	W.	.	22 8 22.81	− 0.01	1 6.21	− 0.14	.	101 28 41.9	+ 3.8	16 12.9	+ 0.1
25	S.	.	22 35 4.48	+ 0.15	1 5.64	− 0.07	.	98 55 45.2	+ 0.8	16 9.6	− 1.6
27	W.	.	22 42 36.44	+ 0.10	1 5.48	− 0.07	.	98 10 49.0	+ 2.1	16 10.0	− 0.8
Mar. 2	R.	.	22 53 50.28	+ 0.02	1 5.24	− 0.10	.	97 2 30.1	+ 1.5	16 8.6	− 1.4
3	W.	.	22 57 33.89	+ 0.01	1 5.22	− 0.05	N.	96 39 31.1	+ 1.0	. . .	. .
23	W.	.	0 10 56.69	− 0.02	1 4.44	− 0.04	.	88 48 48.8	+ 0.7	16 2.6	− 1.9
25	W.	.	0 18 13.02	+ 0.04	1 4.38	− 0.08	.	88 1 38.8	+ 1.4	16 5.6	+ 1.7
30	R.	.	0 36.4	. .	. .	. .	.	86 4 34.8	+ 1.0	16 0.8	− 1.8
April 1	E.	.	0 43.7	. .	. .	. .	.	85 18 12.1	− 0.7	16 1.0	− 1.0
12	W.	.	1 23 52.65	− 0.04	1 4.85	− 0.02	.	81 10 27.9	− 0.1	15 59.0	0.0
13	R.	.	1 27 33.52	− 0.14	1 4.87	− 0.04	.	80 48 41.8	− 0.3	15 58.5	− 0.2
17	E.	.	1 42 21.08	− 0.07	1 5.10	− 0.02	.	72 23 13.5	+ 0.4	15 57.2	− 0.4
18	W.	.	1 46 3.91	− 0.06	1 5.06	− 0.12	.	79 2 18.3	+ 2.1	15 57.2	− 0.2
20	S.	.	1 53 30.77	− 0.05	1 5.26	− 0.04	.	78 21 . .	. .	. . .	. .
25	E.	.	2 12 15.47	− 0.06	1 5.58	− 0.05	.	76 40 57.8	− 2.3	15 55.1	− 0.5
27	R.	.	2 19 48.48	− 0.14	1 5.65	− 0.12	.	76 2 33.2	+ 1.3	15 54.8	− 0.3
28	W.	.	2 23 35.87	− 0.02	1 5.76	− 0.09	.	75 43 39.0	+ 0.6	15 54.1	− 0.8
May 1	R.	.	2 35 0.78	− 0.03	1 5.99	− 0.10	.	74 48 23.0	− 0.6	15 53.0	− 1.2
3	E.	.	2 42 40.00	− 0.08	1 6.20	− 0.05	.	74 12 48.8	+ 0.6	15 52.6	− 1.1
9	R.	.	3 5 51.39	− 0.15	1 6.58	− 0.16	.	72 32 28.6	+ 2.1	15 51.0	− 1.4
17	R.	.	3 37 19.87	− 0.01	1 7.30	− 0.09	.	70 35 5.6	+ 1.4	15 49.6	− 1.1
23	E.	.	4 1 19.77	− 0.06	1 7.80	− 0.05	.	69 20 42.9	− 0.1	15 48.6	− 1.1
24	S.	.	4 5 21.59	− 0.03	1 7.90	− 0.02	.	69 9 33.5	+ 1.0	15 49.1	− 0.4
26	W.	.	4 13 26.70	+ 0.04	1 7.94	− 0.12	.	68 48 16.7	− 0.6	15 48.6	− 0.6
29	R.	.	4 25 37.64	− 0.05	1 8.16	− 0.10	.	68 19 7.5	+ 0.9	15 48.0	− 0.8
30	W.	.	4 29 42.30	+ 0.05	1 8.16	− 0.16	N.	68 10 9.1	+ 0.8	. . .	. .
31	E.	.	4 33 47.21	− 0.03	1 8.31	− 0.07	.	68 1 33.8	+ 1.1	15 46.8	− 1.7
June 2	R.	.	4 41 58.47	+ 0.04	1 8.41	− 0.08	.	67 45 31.5	+ 1.1	15 47.4	− 0.8
5	S.	.	4 54 18.04	− 0.01	1 8.55	− 0.09	S.	67 24 24.9	+ 3.3	. . .	. .
6	R.	.	4 58 25.22	− 0.08	1 8.60	− 0.08	.	67 18 5.8	− 0.2	15 47.0	− 0.7
8	E.	.	5 6 40.64	− 0.11	1 8.72	− 0.04	.	67 6 46.7	+ 0.4	15 45.8	− 1.7
9	S.	I	5 10 48.95	+ 0.04	. .	. .	S.	67 1 42.7	+ 0.1	. . .	. .
14	R.	.	5 31 33.25	+ 0.01	1 8.74	− 0.18	.	66 42 30.8	+ 1.4	15 45.6	− 1.3
15	W.	.	5 35 42.73	+ 0.09	1 8.86	− 0.07	.	66 39 55.0	+ 2.5	15 44.9	− 1.9
17	S.	.	5 44 1.88	+ 0.15	1 8.80	− 0.16	.	66 35 53.9	+ 1.2	15 45.4	− 1.3
20	E.	.	5 56 30.74	− 0.02	1 8.86	− 0.12	.	66 33 0.1	+ 1.4	15 45.8	− 0.7
21	S.	.	6 0 40.41	− 0.02	1 8.87	− 0.11	.	66 32 51.3	+ 1.0	15 45.0	− 1.4
22	R.	I	6 4 50.05	+ 0.01	. .	. .	.	66 33 6.0	− 0.7	15 45.1	− 1.3
24	E.	.	6 13 8.98	− 0.02	1 8.89	− 0.06	.	66 34 54.3	+ 0.6	15 45.2	− 1.1
26	R.	.	6 21 27.42	− 0.06	1 8.79	− 0.13	.	66 38 19.4	− 0.2	15 45.6	− 0.7
27	W.	.	6 25 36.49	+ 0.01	1 8.77	− 0.13	.	66 40 39.5	0.0	15 45.5	− 0.8

SUN.

Date.	Observer.	Limb.	Apparent Right Ascension of Center.	Corr'n to Am. Eph.	Sidereal Time of Transit of Semi-diameter.	Corr'n to Am. Eph.	Limb.	Geocentric N. P. Distance of Center.	Corr'n to Am. Eph.	Vertical Semi-diameter.	Corr'n to Am. Eph.
			h. m. s.	s.	m. s.	s.		° ′ ″	″	′ ″	″
July 3	S.	I	6 50 26.12	+ 0.11	. .	. .	S.	67 3 15.2	+ 3.3	. . .	. .
7	S.	I	7 6 53.55	+ 0.10	. .	. .	N.	67 26 15.7	+ 0.5	. . .	. .
10	E.	.	7 19 10.20	— 0.09	1 8.33	— 0.01	.	67 47 40.1	+ 0.4	15 45.6	— 0.7
12	R.	.	7 27 19.46	0.00	1 8.13	— 0.99	.	68 3 52.1	+ 0.7	15 45.2	— 1.2
13	W.	.	7 31 23.63	+ 0.25	1 7.98	— 0.17	.	68 12 30.9	— 0.2	15 46.0	— 0.4
15	S.	.	7 39 29.93	+ 0.13	1 7.88	— 0.13	.	68 30 58.4	+ 0.8	15 44.8	— 1.7
24	R.	.	8 15 32.05	+ 0.02	1 7.16	— 0.14	.	70 11 33.6	— 1.4	15 47.0	— 0.2
25	W.	.	8 19 29.33	— 0.03	1 7.09	— 0.13	.	70 24 28.0	+ 0.2	15 46.4	— 0.9
28	R.	I	8 31 17.60	— 0.08	. .	. .	N.	71 5 4.3	+ 2.3	. . .	. .
Aug. 7	E.	.	9 9 59.77	+ 0.17	1 6.07	— 0.03	.	73 39 47.9	— 2.3	15 46.3	2.6
11	E.	.	9 25 12.10	— 0.03	1 5.76	— 0.01	.	74 49 24.9	— 1.0	15 48.9	— 0.7
21	W.	.	10 2 35.45	— 0.08	1 4.98	— 0.03	N.	77 59 42.3	+ 1.8	. . .	. .
24	W.	I	10 13 (38.58)	(— 0.23)	. .	. .	N.	79 0 43.1	+ 2.6	. . .	. .
25	W.	.	10 17 19.04	+ 0.02	1 4.68	— 0.08	N.	79 21 23.3	— 1.7	. . .	. .
Sept. 15	W.	.	10 33 16.72	— 0.06	1 3.98	— 0.08	.	87 6 39.2	— 0.6	15 55.8	— 1.4
19	S.	.	10 47 38.28	+ 0.03	1 3.97	— 0.09	.	88 39 35.9	— 0.2	15 56.4	— 1.9
20	W.	.	10 51 13.70	+ 0.04	1 3.92	— 0.15	.	89 2 56.2	+ 0.5	15 57.0	— 1.6
21	S.	.	10 54 49.10	— 0.02	1 3.96	— 0.12	.	89 26 16.3	— 0.4	15 57.0	— 1.8
29	W.	.	12 23 37.31	— 0.08	1 4.14	— 0.16	.	92 33 20.8	— 0.6	15 59.6	— 1.4
Oct. 3	S.	.	12 38 7.11	+ 0.02	1 4.43	— 0.05	.	94 6 29.9	— 0.4	16 0.3	— 1.8
9	W.	.	13 0 2.71	+ 0.04	1 4.72	— 0.10	.	96 24 42.1	+ 0.7	16 2.9	— 0.9
14	W.	.	13 18 31.61	— 0.03	1 5.08	— 0.11	.	98 17 35.0	+ 0.2	16 4.2	— 0.9
Nov. 3	W.	.	14 35 2.86	+ 0.22	1 7.12	— 0.09	.	105 11 46.1	+ 1.1	16 10.7	+ 0.3
9	W.	.	14 59 0.46	+ 0.08	1 7.76	— 0.17	.	106 58 2.3	— 2.0	16 10.5	— 1.3
15	W.	.	15 23 28.81	+ 0.02	1 8.52	— 0.13	.	108 35 59.4	+ 0.9	16 11.4	— 0.7
24	W.	.	16 1 6.66	— 0.04	1 9.60	— 0.06	.	110 38 41.6	+ 2.2	16 14.4	— 0.5
27	W.	.	16 13 53.24	— 0.06	1 9.88	— 0.08	.	111 12 50.6	— 0.2	16 16.0	+ 0.6
30	W.	.	16 26 46.45	+ 0.04	1 10.15	— 0.10	S.	111 43 27.1	+ 0.7	. . .	. .
Dec. 4	W.	.	16 44 6.72	+ 0.14	1 10.48	— 0.10	.	112 18 23.8	+ 0.1	16 15.4	— 1.0
6	W.	.	16 52 50.37	+ 0.08	1 10.58	— 0.14	.	112 33 . .	. .	. . .	. .
12	W.	.	17 19 12.99	— 0.07	1 11.06	— 0.01	.	113 7 16.4	— 0.2	16 16.2	— 1.2
16	W.	.	17 36 55.17	— 0.06	1 11.10	— 0.12	.	113 20 46.1	— 0.8	16 17.4	— 0.3

MOON.

Date.	Mean Time of Transit of Center.	Observer.	Limb.	Apparent Right Ascension of Center.	Correction to Tables of Peirce.	Correction to Tables of Hansen.	Limb.	Geocentric N. P. Distance of Center.	Correction to Tables of Peirce.	Correction to Tables of Hansen.
1882.	h. m. s.			h. m. s.	s.	s.		° ′ ″	″	″
Jan. 23	3 48 46.6	E.	I	0 1 7.52	— 0.21	— 0.83	S.	84 50 25.3	+ 2.0	+ 4.4
27	7 15 9.9	E.	I	3 43 50.96	— 0.28	— 0.78	S.	69 25 20.3	+ 2.6	+ 2.3
Feb. 1	11 22 59.8	S.	I	8 12 4.29	— 0.54	— 0.62	S.	74 13 57.7	— 1.5	— 4.5
2	12 7 17.0	R.	I, II	9 0 25.38	— 0.73	— 0.71	S.	77 48 46.3	— 0.1	— 2.6
10	17 59 31.9	R.	II	15 25 10.61	— 0.08	— 1.02	S.	109 45 4.2	— 3.4	— 2.3
24	6 2 24.7	R.	I	4 21 17.35	— 0.31	— 0.62	S.	68 44 21.7	+ 5.5	+ 2.5
25	6 54 38.3	S.	I	5 17 36.03	— 0.43	— 0.64	S.	68 17 30.8	+ 2.7	+ 0.1
26	7 45 20.8	E.	I	6 12 23.46	— 0.44	— 0.64	N.	68 59 46.2	+ 2.1	— 0.4
27	8 34 7.0	R.	I	7 5 14.20	— 0.39	— 0.59	N.	70 43 48.9	+ 1.9	— 0.9
March 2	10 48 34.9	R.	I	9 31 53.87	— 0.40	— 0.66	N.	80 31 28.0	— 0.9	— 5.3
3	11 30 33.8	W.	I	10 17 56.23	— 0.27	— 0.57	N.	84 45 56.0	+ 0.2	— 3.9
4	12 12 2.8	E.	I, II	11 3 28.60	— 0.37	— 0.73	S.	89 13 18.0	+ 1.2	— 2.9
23	3 52 1.2	W.	I	3 56 59.30	+ 0.24	— 0.50	S.	69 33 2.0	+ 4.6	+ 0.4
25	5 38 56.9	W.	I	5 52 5.67	— 0.32	— 0.40	N.	68 51 51.1	+ 5.4	+ 1.7
26	6 29 16.7	R.	I	6 46 30.31	— 0.71	— 0.61	N.	70 14 47.4	+ 1.7	— 0.6
28	8 2 39.4	E.	I	8 28 1.40	— 0.60	— 0.49	N.	76 38 20.1	— 1.7	— 2.9
29	8 46 15.7	S.	I	9 15 41.49	— 0.56	— 0.54	N.	79 17 53.3	— 0.6	— 2.2
30	9 28 32.4	R.	I	10 2 1.70	— 0.52	— 0.57	N.	83 22 54.2	— 1.0	— 3.3
April 12	20 10 58.8	W.	II	21 37 28.79	+ 0.39	— 1.19	N.	98 44 42.5	+ 3.7	+ 10.9
24	5 57 19.2	W.	I	8 8 47.60	— 0.76	— 0.56	N.	74 31 51.9	— 0.8	— 1.2
25	6 42 1.0	E.	I	8 57 33.32	— 0.86	— 0.56	N.	78 0 4.5	— 2.8	— 1.8
27	8 6 42.4	R.	I	10 30 21.73	— 0.78	— 0.44	N.	86 11 17.3	— 2.9	— 1.3
30	10 13 52.2	S.	I	12 49 42.06	— 0.62	— 0.60	N.	99 20 34.8	— 3.3	— 3.7
May 1	10 59 25.8	R.	I	13 39 19.68	— 0.56	— 0.71	N.	103 18 19.4	— 3.0	— 4.0
2	11 47 35.6	W.	I	14 31 33.96	— 0.40	— 0.75	S.	106 42 39.4	— 2.5	— 3.3
3	12 38 33.7	E.	II	15 26 37.01	— 0.50	— 1.05	S.	109 18 56.0	— 2.7	— 2.9
23	5 19 46.0	E.	I	9 25 28.28	— 0.82	— 0.58	N.	80 20 6.9	— 2.2	— 1.3
25	6 43 38.5	R.	I	10 57 27.70	— 0.84	— 0.45	N.	88 50 44.7	— 5.9	— 3.4
26	7 25 15.4	W.	I	11 43 8.04	— 1.02	— 0.56	N.	93 16 17.4	— 4.7	— 2.2
29	9 39 17.3	R.	I	14 9 21.60	— 0.92	— 0.66	N.	105 22 51.6	— 7.0	— 6.9
June 2	13 5 28.5	R.	II	18 1 54.51	— 0.26	— 1.09	N.	110 45 30.4	+ 1.2	+ 3.0
21	4 39 10.5	S.	I	10 39 6.29	— 0.81	— 0.56	N.	86 59 5.1	— 2.7	— 1.4
27	9 9 58.4	W.	I	15 34 18.08	— 1.13	— 1.04	N.	109 33 17.2	+ 1.7	+ 0.2
29	11 1 46.8	S.	I	17 34 17.86	— 0.34	— 0.85	.	111 9 . .	. .	. .
July 9	20 2 46.8	W.	II	3 16 12.36	— 0.03	— 1.11	N.	71 11 54.3	+ 1.6	+ 2.8
12	22 43 26.7	W.	II	6 9 8.34	— 0.24	— 0.99	.	60 23 . .	. .	. .
24	6 58 46.9	R.	I	15 9 12.01	— 1.00	— 0.88	N.	108 22 1.5	— 2.0	— 2.2
25	7 50 48.3	W.	I	16 5 18.55	— 1.09	— 1.00	N.	110 19 16.4	— 1.3	— 2.5
28	10 41 46.2	R.	I	19 8 34.20	— 0.38	— 1.01	N. S.	108 41 2.3	+ 2.2	+ 2.5
Aug. 21	5 41 23.4	W.	I	15 41 59.34	— 0.79	— 0.75	N.	109 24 4.6	— 1.8	+ 0.2
Sept. 15	2 3 39.9	W.	I	13 42 13.91	— 0.60	— 0.53	.	102 48 . .	. .	. .
19	5 19 28.8	S.	I	17 14 21.17	— 0.51	— 0.58	N.	110 40 47.1	+ 2.2	+ 5.2
Oct. 14	1 34 46.9	W.	I	15 7 36.18	— 0.46	— 0.61	.	107 42 . .	. .	. .
Nov. 2	18 27 21.6	W.	II	9 17 51.69	— 0.59	— 0.75	S.	79 47 37.5	(— 9.6)	(— 9.5)
15	3 51 34.9	W.	I	19 30 56.35	— 0.09	— 0.76	S.	107 6 42.6	— 2.4	+ 0.7
20	8 10 23.4	S.	I	0 10 10.18	+ 0.13	— 0.52	S.	84 44 10.7	+ 0.4	+ 1.9
21	9 3 55.7	W.	I	1 7 47.85	— 0.10	— 0.78	S.	79 50 7.2	+ 0.7	+ 2.6

MERCURY.

Date.	Observer.	Part observed.	Apparent Right Ascension of Center.	Corr'n to Am. Eph.	Sidereal Time of Transit of Semi-diameter.	Corr'n to Am. Eph.	Part observed.	Geocentric N. P. Distance of Center.	Corr'n to Am. Eph.	Vertical Semi-diameter.	Corr'n to Am. Eph.
1882.			h. m. s.	s.	s.	s.		° ′ ″	″	″	″
Feb. 1	S.	C.	22 8 13.80	+ 0.15	. .	. .	C.	102 2 26.9	+ 1.5	. .	. .
2	R.	I	22 13 25.75	+ 0.08	. .	. .	C.	101 20 32.5	+ 1.1	. .	. .
6	R.	I	22 30 40.81	+ 0.09	. .	. .	C.	98 41 34.2	+ 3.4	. .	. .
10	R.	I	22 40 19.90	+ 0.05	. .	. .	C.	96 35 26.2	+ 3.6	. .	. .
15	W.	I	23 38 51.43	+ 0.11	. .	. .	S.	95 22 43.9	+ 6.5	. .	. .
March 2	W.	II	21 48 45.98	+ 0.19	. .	. .	C.	100 37 24.2	+ 2.1	. .	. .
9	R.	II	21 49 53.88	+ 0.09	. .	. .	C.	102 14 44.0	+ 2.2	. .	. .
29	R.	.	23 3.9	. .	.	. .	C.	98 22 49.8	+ 1.0	. .	. .
30	W.	C.	23 9 2.70	+ 0.22	. .	. .	C.	97 55 7.5	+ 0.8	. .	. .
April 11	W.	II	0 17 0.96	+ 0.09	. .	. .	N.	90 47 24.2	0.0	. .	. .
12	R.	II	0 23 12.38	+ 0.14	. .	. .	C.	90 4 34.3	+ 1.8	. .	. .
16	E.	II	0 48 52.07	+ 0.14	. .	. .	N.	87 3 33.8	+ 1.1	. .	. .
17	W.	II	0 55 31.38	+ 0.04	. .	. .	C.	86 16 7.2	+ 1.3	. .	. .
27	W.	II	2 8 20.67	— 0.07	. .	. .	C.	77 49 51.3	+ 1.4	. .	. .
May 9	R.	I	3 40 53.32	— 0.35	. .	. .	C.	69 13 56.3	+ 3.7	. .	. .
17	R.	I	4 47 34.54	— 0.31	. .	. .	C.	65 29 34.8	+ 3.3	. .	. .
23	E.	I	5 30 59.48	— 0.32	. .	. .	C.	64 25 50.2	+ 0.7	. .	. .
24	S.	C.	5 37 28.05	— 0.21	. .	. .	C.	64 22 49.7	+ 0.5	. .	. .
29	R.	I	6 6 7.03	— 0.26	. .	. .	C.	64 34 25.2	+ 0.7	. .	. .
30	W.	I	6 11 3.57	— 0.22	. .	. .	.	64 41 18.8	— 0.6	3.4	— 0.4
31	E.	I	6 15 43.39	— 0.28	. .	. .	.	64 49 30.7	— 1.1	3.6	— 0.3
June 2	R.	I	6 24 11.92	— 0.29	. .	. .	C.	65 9 27.2	+ 1.9	. .	. .
8	E.	I	6 42 23.21	— 0.56	. .	. .	C.	66 30 2.8	— 0.2	. .	. .
July 23	R.	II	6 53 6.80	— 0.14	. .	. .	C.	68 21 36.4	+ 1.7	. .	. .
24	W.	II	6 59 3.78	— 0.27	. .	. .	.	68 15 13.4	+ 1.2	3.6	+ 0.3
Sept. 15	W.	I	12 55 58.28	+ 0.08	. .	. .	N.	97 18 27.2	— 1.8	. .	. .
19	S.	C.	13 14 55.01	+ 0.07	. .	. .	C.	99 48 42.7	+ 0.8	. .	. .
21	S.	C.	13 23 56.39	+ 0.07	. .	. .	C.	100 58 58.0	+ 1.4	. .	. .
29	W.	I	13 56 0.59	+ 0.05	. .	. .	N.	104 58 21.0	+ 0.4	. .	. .
Oct. 9	W.	I	14 19 21.41	+ 0.11	. .	. .	N.	107 31 44.7	+ 1.7	. .	. .
14	W.	I	14 17 29.80	— 0.07	. .	. .	N.	107 1 31.9	+ 2.6	. .	. .
Nov. 2	W.	C.	13 29 25.80	+ 0.26	. .	. .	C.	97 12 33.3	+ 0.9	. .	. .
5	S.	C.	13 37 12.49	+ 0.07	. .	. .	C.	97 43 30.4	+ 2.0	. .	. .
14	W.	II	14 18 24.21	+ 0.07	. .	. .	C.	101 46 25.6	+ 1.3	. .	. .
23	W.	C.	15 10 58.94	+ 0.25	. .	. .	C.	106 44 9.4	+ 2.7	. .	. .
26	W.	C.	15 29 35.25	+ 0.32	. .	. .	C.	108 16 12.5	+ 2.9	. .	. .

VENUS.

Date.	Observer.	Part observed.	Apparent Right Ascension of Center.	Correction to Am. Eph.	Sid. Time of Transit of Semi-diameter.	Correction to Am. Eph.	Part observed.	Geocentric N. P. Distance of Center.	Correction to Am. Eph.	Vertical Semi-diameter.	Corr'n to Am. Eph.
1882.			h. m. s.	s.	s.	s.		° ′ ″	″	″	″
Jan. 31	S.	.	20 43 17.96	+ 0.09	0.35	0.00	.	109 15 28.7	+ 2.4	4.0	— 1.0
Feb. 9	R.	II	21 28 (58.12)	(— 0.61)	. .	. .	C.	106 34 (21.6)	(+ 5.2)	. .	. .
Mar. 2	R.	.	23 4 58.43	0.00	0.31	— 0.02	C.	97 26 55.9	+ 3.8	. .	. .
3	W.	I	23 9 36.67	— 0.06	. .	. .	N.	96 57 44.2	+ 1.2	. .	. .
30	R.	.	1 12.8	. .	. .	. .	C.	83 21 28.1	+ 3.0	. .	. .
31	W.	I	1 17 24.22	— 0.11	. .	. .	N.	82 51 45.2	— 1.0	. .	. .
April 13	R.	.	2 17 55.41	— 0.04	0.37	+ 0.01	C.	76 45 19.7	+ 0.9	. .	. .
17	E.	I	2 37 0.93	— 0.16	. .	. .	.	75 2 12.3	+ 1.2	5.5	+ 0.3
25	E.	I	3 16 1.58	— 0.30	. .	. .	C.	71 54 33.1	— 0.2	. .	. .
May 1	R.	.	3 46 3.11	— 0.13	0.43	+ 0.05	C.	69 53 15.5	+ 0.8	. .	. .
3	E.	I	3 56 12.23	— 0.18	. .	. .	C.	69 17 0.3	— 0.1	. .	. .
9	R.	.	4 27 4.65	— 0.21	. .	. .	S.	67 42 9.6	+ 2.1	5.8	+ 0.4
17	R.	.	5 9 5.00	0.00	. .	. .	S.	66 10 46.8	+ 1.2	4.3	— 1.2
23	E.	.	5 41 0.78	— 0.12	. .	. .	S.	65 30 45.1	+ 0.1	6.2	+ 0.6
24	S.	.	5 46 21.34	— 0.06	0.48	+ 0.07	.	65 26 34.2	+ 0.9	5.1	— 0.5
29	R.	I	6 13 5.19	— 0.07	. .	. .	.	65 16 22.2	+ 1.2	6.2	+ 0.5
30	W.	I	6 18 25.81	— 0.04	. .	. .	.	65 16 28.7	+ 0.4	6.1	+ 0.4
June 2	R.	I	6 34 26.06	— 0.08	. .	. .	.	65 21 10.7	+ 0.8	6.0	+ 0.2
8	E.	I	7 6 14.54	— 0.12	. .	. .	.	65 49 49.9	— 1.1	6.4	+ 0.5
14	R.	I	7 37 36.80	— 0.07	. .	. .	.	66 43 32.7	+ 0.8	5.6	— 0.4
21	S.	.	8 13 25.19	— 0.07	0.49	+ 0.05	.	68 15 51.5	+ 0.8	6.2	0.0
24	E.	I	8 28 27.17	+ 0.01	. .	. .	.	69 4 30.7	+ 1.1	6.3	0.0
26	R.	I	8 38 21.56	— 0.06	. .	. .	.	69 39 44.6	— 0.1	6.9	+ 0.6
27	W.	I	8 43 16.81	+ 0.06	. .	. .	.	69 58 10.5	— 0.7	7.0	+ 0.6
July 6	E.	I	9 26 28.16	— 0.27	. .	. .	.	73 6 35.2	+ 0.2	7.6	+ 0.9
10	E.	I	9 45 3.32	— 0.06	. .	. .	N.	74 41 52.6	0.0	. .	. .
15	S.	I	10 7 46.45	— 0.20	. .	. .	.	76 49 24.5	+ 0.7	7.4	+ 0.4
24	R.	I	10 47 22.10	— 0.12	. .	. .	.	80 57 56.0	+ 1.3	8.4	+ 1.0
Sept. 15	W.	I	14 23 10.08	— 0.04	. .	. .	N.	106 48 31.8	+ 1.9	. .	. .
19	S.	I	14 39 7.82	+ 0.04	. .	. .	N.	108 25 30.2	+ 2.5	. .	. .
29	W.	I	15 18 38.79	— 0.10	. .	. .	N.	112 0 17.8	+ 0.3	. .	. .
Oct. 3	S.	I	15 34 8.74	— 0.03	. .	. .	N.	113 13 52.2	+ 1.8	. .	. .
9	W.	I	15 56 48.00	0.00	. .	. .	N.	114 49 36.6	+ 2.4	. .	. .
14	W.	I	16 14 52.25	+ 0.03	. .	. .	N.	115 55 17.0	— 0.1	. .	. .
31	W.	I	17 5 39.42	— 0.15	. .	. .	.	117 58 19.4	0.0	20.4	— 0.3
Nov. 3	W.	I	17 11 57.44	+ 0.08	. .	. .	.	118 3 35.5	+ 0.7	21.9	+ 0.2
15	W.	I	17 24 45.32	+ 0.08	. .	. .	.	117 32 16.4	— 1.2	25.0	— 1.4
27	W.	I	17 13 22.08	+ 0.08	. .	. .	N.	115 24 7.5	+ 1.8	. .	. .
30	W.	I	17 7 6.63	+ 0.17	. .	. .	.	114 35 26.5	— 2.2	29.2	— 2.5
Dec. 5	W.	.	16 52 39.76	+ 0.28	2.26	— 0.08	.	112 43 41.2	+ 1.8	31.6	— 0.7
11	W.	II	16 38 38.72	+ 0.22	. .	. .	S.	110 46 26.1	+ 0.2	. .	. .

MARS.

Date.	Observer.	Part observed.	Apparent Right Ascension of Center.	Corr'n to Am. Eph.	Sidereal Time of Transit of Semi-diameter.	Corr'n to Am. Eph.	Part observed.	Geocentric N. P. Distance of Center.	Corr'n to Am. Eph.	Vertical Semi-diameter.	Corr'n to Am. Eph.
1882.			h. m. s.	s.	s.	s.		° ′ ″	″	″	″
Jan. 19	R.	. .	5 51 50.54	+ 0.58	0.65	+ 0.11	. .	62 53 10.5	0.0	8.4	+ 1.1
23	E.	. .	5 49 4.73	+ 0.46	0.55	+ 0.03	. .	62 56 41.5	+ 1.0	7.3	+ 0.2
27	E.	. .	5 47 17.57	+ 0.44	0.59	+ 0.09	. .	63 0 46.3	+ 0.4	7.8	+ 1.0
Feb. 1	S.	. .	5 46 24.09	+ 0.50	0.54	+ 0.06	. .	63 6 16.2	+ 0.3	6.6	+ 0.1
2	R.	. .	5 46 23.60	+ 0.38	0.55	+ 0.08	. .	63 7 24.2	+ 1.0	7.0	+ 0.6
6	R.	. .	5 46 55.09	+ 0.47	0.54	+ 0.09	. .	63 11 54.1	+ 1.7	7.8	+ 1.6
10	R.	. .	5 48 16.55	+ 0.32	0.57	+ 0.13	. .	63 16 21.4	+ 1.1	6.6	+ 0.7
15	W.	. .	5 51 4.47	+ 0.46	0.47	+ 0.06	. .	63 21 55.7	+ 1.0	6.8	+ 1.1
17	S.	. .	5 52 30.74	+ 0.43	0.48	+ 0.07	. .	63 24 10.3	+ 0.5	6.0	+ 0.5
23	W.	. .	5 57 49.90	+ 0.39	0.46	— 0.07	S.	63 31 9.5	+ 0.3	. .	. .
24	R.	. .	5 58 51.36	+ 0.43	0.46	+ 0.08	. .	63 32 22.9	+ 0.7	6.0	+ 0.8
25	S.	. .	5 59 54.95	+ 0.41	0.43	+ 0.05	. .	63 33 37.2	+ 0.7	5.6	+ 0.4
Mar. 25	W.	. .	6 41.3	. .	. .	. .	. .	64 26 11.8	+ 1.9	4.6	+ 0.6
26	R.	. .	6 43 5.21	+ 0.38	0.30	+ 0.01	C.	64 29 1.9	+ 1.1	. .	. .
29	S.	. .	6 48 35.64	+ 0.39	0.34	+ 0.06	. .	64 38 7.5	+ 2.4	3.9	0.0

JUPITER.

Date.	Observer.	Part observed.	Apparent Right Ascension of Center.	Corr'n to Am. Eph.	Sidereal Time of Transit of Semi-diameter.	Corr'n to Am. Eph.	Part observed.	Geocentric N. P. Distance of Center.	Corr'n to Am. Eph.	Vertical Semi-diameter.	Corr'n to Am. Eph.
Jan. 19	R.	. .	2 56 43.58	+ 0.47	1.56	+ 0.07	. .	74 9 54.9	+ 1.6	20.8	+ 0.5
23	E.	. .	2 57 20.20	+ 0.51	1.54	+ 0.06	. .	74 6 7.7	+ 2.0	20.2	+ 0.2
Feb. 1	S.	. .	2 59 28.09	+ 0.59	1.42	— 0.01	. .	73 54 29.4	+ 3.4	20.0	+ 0.6
6	R.	. .	3 1 5.03	+ 0.59	1.40	— 0.01	. .	73 46 17.1	+ 3.2	18.9	— 0.2

SATURN.

Date.	Observer.	Part observed.	Apparent Right Ascension of Center.	Corr'n to Am. Eph.	Sidereal Time of Transit of Semi-diameter.	Corr'n to Am. Eph.	Part observed.	Geocentric N. P. Distance of Center.	Corr'n to Am. Eph.	Vertical Semi-diameter.	Corr'n to Am. Eph.
Nov. 15	W.	. .	3 23 20.37	— 0.04	0.68	— 0.03	. .	73 54 20.8	+ 18.2	10.0	+ 0.4

URANUS.

Date.	Observer.	Part observed.	Apparent Right Ascension of Center.	Corr'n to Am. Eph.	Sidereal Time of Transit of Semi-diameter.	Corr'n to Am. Eph.	Part observed.	Geocentric N. P. Distance of Center.	Corr'n to Am. Eph.	Vertical Semi-diameter.	Corr'n to Am. Eph.
Feb. 10	R.	. .	11 15 23.51	+ 0.16	0.22	+ 0.09	C.	84 19 19.9	+ 2.1	. .	. .
Mar. 2	R.	. .	11 12 19.97	+ 0.03	0.21	+ 0.08	C.	83 59 44.5	+ 1.7	. .	. .
14	R.	. .	11 10 24.04	+ 0.08	0.16	+ 0.03	C.	83 47 35.4	+ 2.0	. .	. .
29	S.	. .	11 8 6.25	+ 0.08	0.21	+ 0.08	. .	83 33 22.3	+ 1.8	1.9	0.0
30	R.	. .	11 7 57.64	+ 0.06	0.20	+ 0.07	C.	83 32 30.2	+ 2.3	. .	. .
Apr. 11	R.	. .	11 6 23.04	+ 0.12	0.14	+ 0.01	C.	83 22 55.8	+ 2.1	. .	. .
13	R.	. .	11 6 8.90	+ 0.02	0.19	+ 0.06	C.	83 21 31.1	+ 1.5	. .	. .
17	E.	. .	11 5 42.70	+ 0.19	0.24	+ 0.11	C.	83 18 52.8	+ 0.1	. .	. .
18	W.	. .	11 5 36.33	+ 0.04	0.12	— 0.01	. .	83 18 16.8	+ 0.9	2.0	+ 0.1
24	W.	C.	11 5 2.57	+ 0.25	. .	. .	C.	83 14 56.8	— 0.1	. .	. .
27	R.	. .	11 4 47.65	+ 0.08	0.16	+ 0.03	C.	83 13 34.2	+ 2.3	. .	. .

NEPTUNE.

Date.	Observer.	Part observed.	Apparent Right Ascension of Center.	Corr'n to Am. Eph.	Sidereal Time of Transit of Semi-diameter.	Corr'n to Am. Eph.	Part observed.	Geocentric N. P. Distance of Center.	Corr'n to Am. Eph.	Vertical Semi-diameter.	Corr'n to Am. Eph.
Jan. 23	E.	. .	2 47 27.32	+ 0.20	. .	. .	. .	75 43 18.5	+ 0.8	. .	. .
Nov. 15	W.	. .	3 1 15.06	+ 0.24	. .	. .	. .	74 45 44.1	— 1.4	. .	. .

SMALL PLANETS.

The observations have been compared with the Ephemerides of the Berliner Jahrbuch, unless otherwise specified.

Date.	Observer.	Washington Mean Time.	Berlin Mean Time corrected for Aberration.	Apparent Right Ascension of Center.	Corr'n to Ephem.	Geocentric N. P. Distance of Center.	Corr'n to Ephem.	Notes.
PALLAS, (2).								
1882.		h. m.	h. m.	h. m. s.	s.	° ′ ″	″	
July 28	R.	12 13.9	17 54.6	20 40 55.91	− 1.10	74 29 51.0	+ 4.4	
JUNO, (3).								
July 6	E.	12 51.9	18 37.8	19 52 18.20	+ 4.12	94 5 18.1	− 0.7	
10	E.	12 32.8	18 18.9	19 48 59.17	+ 4.00	94 16 8.3	− 0.8	
24	R.	11 25.5	17 11.9	19 36 44.77	+ 4.07	95 13 50.8	+ 1.9	
28	R.	11 6.5	16 52.9	19 33 18.53	+ 4.16	95 35 12.9	− 0.4	
ASTRÆA, (5).								
Nov. 8	W.	11 3.4	16 52.2	2 16 20.11	+ 7.66	85 14 59.4	− 31.1	
15	W.	10 30.0	16 18.7	2 10 22.93	+ 7.37	85 41 58.7	− 33.7	
IRIS, (7).								
Feb. 2	R.	11 17.9	17 9.3	8 10 56.74	+ 7.05	77 20 29.7	+ 11.2	
10	R.	10 39.4	16 30.4	8 3 52.24	+ 6.93	77 1 28.9	+ 12.6	
FLORA, (8).								
May 25	R.	12 30.1	18 19.8	16 44 55.62	+ 9.67	105 39 50.3	+ 36.0	
29	R.	12 10.1	17 59.9	16 40 34.18	+ 9.58	105 37 12.3	+ 37.0	
June 2	R.	11 49.9	17 39.7	16 36 8.45	+ 9.62	105 35 18.8	+ 38.9	
METIS, (9).								
July 28	R.	12 24.0	18 13.2	20 51 0.09	− 3.61	115 57 51.2	+ 10.6	
VICTORIA, (12).								
Aug. 14	W.	12 45.9	18 40.3	22 20 5.88	−20.23	81 27 46.1	+100.7	

Date.	Observer.	Washington Mean Time.	Berlin Mean Time corrected for Aberration.	Apparent Right Ascension of Center.	Corr'n to Ephem.	Geocentric N. P. Distance of Center.	Corr'n to Ephem.	Notes.
IRENE, (14).								
1882.		h. m.	h. m.	h. m. s.	s.	° ′ ″	″	
Nov. 15	W.	11 45.7	17 32.5	3 26 18.44	+ 3.58	79 28 21.4	− 19.7	
EUNOMIA, (15).								
Nov. 15	W.	11 57.0	17 48.6	3 37 39.24	+34.74	52 28 28.3	− 70.0	
PSYCHE, (16).								
Feb. 10	R.	13 7.5	18 50.8	10 32 24.85	+ 4.47	80 41 25.4	+ 24.8	
Mar. 2	R.	11 33.4	17 16.7	10 16 50.48	+ 4.53	78 55 29.4	+ 24.4	
4	E.	11 24.0	17 7.2	10 15 19.91	+ 4.53	78 45 26.8	+ 24.0	
14	R.	10 37.8	16 20.6	10 8 23.31	+ 4.45	77 59 30.0	− 20.9	
MELPOMENE, (18).								
Feb. 10	R.	12 36.9	18 25.7	10 1 41.68	+ 6.96	79 7 21.8	+ 9.6	
Mar. 2	R.	10 59.7	16 48.0	9 43 2.75	+ 6.79	76 8 48.3	+ 7.2	
FORTUNA, (19).								
June 6	R.	12 41.1	18 29.3	17 43 11.05	+18.39	111 27 0.0	− 1.5	
AMPHITRITE, (29).								
Feb. 10	R.	11 25.3	17 14.3	8 49 53.57	− 2.19	65 11 39.3	− 11.5	
17	S.	10 51.2	16 40.0	8 43 19.41	− 2.23	65 8 41.6	− 8.6	
POMONA, (32).								
July 6	E.	12 5.1	17 53.9	19 5 24.95	− 2.78	104 22 27.3	+ 6.5	
10	E.	11 45.7	17 34.4	19 1 40.38	− 3.10	104 25 32.0	+ 4.0	
24	R.	10 38.7	16 27.0	18 49 39.91	− 2.61	104 43 44.7	+ 3.5	
MELETE, (56).								
Aug. 14	W.	12 17.3	18 10.5	21 51 24.92	+ 4.73	90 28 18.9	− 8.8	
CONCORDIA, (58).								
Feb. 10	R.	13 26.8	19 14.9	10 51 40.21	− 3.66	83 44 55.7	− 13.8	
27	R.	12 6.8	17 55.3	10 38 32.86	− 3.73	81 49 44.2	− 12.5	
ELPIS, (59).								
July 28	R.	12 59.0	18 47.9	21 26 6.82	+ 0.31	96 35 25.9	− 0.5	
Aug. 8	W.	12 7.4	17 56.6	21 17 46.96	+ 0.53	97 43 19.4	− 0.9	

Date.	Observer.	Washington Mean Time.	Berlin Mean Time corrected for Aberration.	Apparent Right Ascension.	Corr'n to Ephem.	Geocentric N. P. Distance of Center.	Corr'n to Ephem.	Notes.
SAPPHO, (80).								
1882.		h. m.	h. m.	h. m. s.	s.	° ′ ″	″	
Sept. 15	W.	12 33.8	18 28.5	0 14 6.93	+26.51	75 53 41.6	—103.2	
ANTIOPE, (90).								
July 6	E.	11 35.5	17 23.7	18 35 42.62	— 1.70	115 0 19.9	— 0.2	
10	E.	11 16.4	17 4.6	18 32 24.56	— 1.68	115 5 47.0	— 1.4	
ÆGINA, (91).								
July 28	R.	12 47.9	18 35.2	21 14 57.40	+ 1.96	108 59 33.2	— 11.8	
AMALTHEA, (112).								
							′	
April 13	R.	10 13.1	16 4.4	11 41 54.17	+ 8.	79 36 34.1	+ 0.6	B. J. Circ. No. 178.
17	E.	9 55.5	15 46.6	11 40 2.92	+ 8.	79 28 49.7	+ 0.6	
THYRA, (115).								
							″	
July 28	R.	12 53.3	18 44.4	21 20 23.73	— 7.28	104 8 51.2	— 6.1	B. J. Circ. No. 185.
HERTHA, (135).								
							′	
April 13	R.	12 7.3	17 56.3	13 36 23.98	+ 4.	102 47 7.1	+ 0.3	B. J. Circ. No. 178.
TOLOSA, (138).								
							″	
July 28	R.	12 49.9	18 43.0	21 17 0.42	+ 7.32	112 15 18.9	— 29.5	

COMET 1882 I (*a*) (Wells), S. P.

Date.	Observer.	Apparent Right Ascension.	North Polar Distance.	Log $\rho\Delta$	Remarks.
1882.		h. m. s.	° ′ ″		
May 23	E.	3 28 28.27	332 33 23.3	0.9378	The observed North Polar Distances have not been corrected for parallax.
25	R.	3 45 11.88	329 16 56.3	0.9421	
26	W.	3 52 22.14	327 33 44.5	0.9437	

COMET 1882 II (*b*).

Date.	Observer.	Apparent Right Ascension.	North Polar Distance.	Log $\rho\Delta$	Remarks.
1882.		h. m. s.	° ′ ″		
Sept. 19	W.	11 14 18.96	90 34 31.0	0.7478*n*	The observed North Polar Distances have not been corrected for parallax.
20	S.	11 9 10.94	91 19 23.6	0.7547*n*	
Nov. 15	W.	9 27 50.67	114 49 21.4	0.8982*n*	
18	W.	9 21 4.43	115 43 21.3	0.9015*n*	
20	W.	9 16 18.91	116 17 37.9	0.9036*n*	
21	W.	9 13 51.34	116 34 8.3	0.9045*n*	
22	W.	9 11 21.64	116 50 13.7	0.9055*n*	
24	W.	9 6 16.25	117 21 28.0	0.9072*n*	
Dec. 3	W.	8 42 . .	119 16 18.8	0.9134*n*	
4	W.	8 38 5.22	119 26 11.3	0.9139*n*	
7	W.	8 28 55.33	119 52 0.0	0.9152*n*	
11	W.	8 16 21.74	120 16 30.6	0.9164*n*	
28	W.	7 22 50.82	119 53 13.0	0.9153*n*	
30	W.	7 16 55.38	119 37 25.5	0.9145*n*	

RESULTS

OF

METEOROLOGICAL OBSERVATIONS

MADE AT THE

UNITED STATES NAVAL OBSERVATORY

DURING

THE YEAR 1882.

309—82——1 M

INTRODUCTION.

The meteorological department, during 1882, was under the charge of Professor J. R. EASTMAN, U. S. N., who made a daily examination of all the records and a monthly inspection of all the instruments in use. The observations were made at 0^h, 3^h, 6^h, 9^h a. m., noon, and 3^h, 6^h, 9^h p. m., Washington civil time, by the Observatory watchmen, Messrs. T. HAYS, D. HORRIGAN, and N. CAHILL, who have acquired such a degree of skill as insures a reasonable accuracy in their work.

METEOROLOGICAL INSTRUMENTS.

Standard Barometer.—The barometer was made by JAMES GREEN, of New York, and is used only as a standard by which the NEWMAN barometer is occasionally tested. Drawings and description of this instrument will be found in the volume of Washington Observations for 1862.

Newman Barometer.—This barometer, in daily use, was made by NEWMAN, and is mounted against the northern wall of the northwest room on the first floor of the Observatory. The barometer is mounted with the usual adjustments at the top and bottom, and is attached by heavy brackets to a substantial mahogany board, which is firmly secured to the wall. The cistern is 103 feet above the mean half-tide of the Potomac River. The cistern and tube are of glass; the internal diameter of the former being 3.0 inches, and of the latter 0.532 inch.

The scale is attached to a brass rod having the usual adjustment to the surface of the mercury in the cistern. It is silvered and divided to 0.05 inch, and by means of a vernier may be read to 0.002 inch. The temperature of the mercury in the cistern is determined by a small ivory-scale thermometer, the bulb of which is constantly immersed in the mercury. The observations with this instrument in 1882, as printed in this volume, have received the constant correction of + 0.005 inch, determined in 1864, and have also been reduced to 32°.0 Fahrenheit.

Dry-bulb Thermometer.—This is a mercurial thermometer by GREEN, with a bulb 1.5 inches long and 0.2 inch in diameter. The scale is of glass, 12.0 inches long, 0.8 inch wide, and 0.1 inch thick. It is divided to half-degrees from — 30°.0 to + 125°.0 Fahrenheit. Several independent tests, in the spring of 1868, indicated that the *freezing-point* had changed its position on the scale since 1863.

In 1871, the dry-bulb, the maximum, and the minimum thermometers were compared with the KEW standard thermometer, No. 462, belonging to Professor EASTMAN. No appreciable errors were detected in the maximum and minimum thermometers.

A correction of $-0^{\circ}.9$ was deduced for the dry-bulb thermometer, and in 1876 this correction was found to be $-1^{\circ}.0$, and each observation published in this volume has been corrected by the latter quantity.

Wet-bulb Thermometer.—This instrument is similar to the preceding in materials, construction, and dimensions. Its scale extends from $-35^{\circ}.0$ to $+115^{\circ}.0$ Fahrenheit. The bulb is covered with soft, fine linen, kept moist by the capillary action of a bundle of fine linen fibers that communicate with water in a bird-glass placed close beside it. The linen on the bulb is changed before its free action becomes impaired by dust.

Maximum Thermometer.—This is a mercurial thermometer, with a bulb 1.5 inches long and 0.2 inch in diameter. The scale is of glass, 12.0 inches long, 0.8 inch wide, and 0.1 inch thick, and is graduated to half-degrees from $-50^{\circ}.0$ to $+120^{\circ}.0$ Fahrenheit. At a point a short distance above the bulb, the internal diameter of the tube is so reduced that, while with the increase of temperature the mercury passes freely, with the least decrease of temperature the column of mercury is broken at the point of contraction, if the instrument is nearly horizontal, and the top of the column marks the highest temperature.

The top of the scale is attached by a metallic clamp to a pivot, around which the thermometer revolves freely in a vertical plane. This pivot is secured to a walnut board fixed to a post, about 3 feet above the ground; and the thermometer is placed nearly horizontal by resting the scale near the bulb on a wooden pin in the board.

After each observation, the instrument is adjusted by removing the pin and allowing the thermometer to swing freely from the pivot at the top of the scale, which motion is generally sufficient to reunite the column of mercury. In 1873, it was found that the readings from this thermometer required a correction of $+0^{\circ}.5$, which has been applied to the observations of 1882.

Minimum Thermometer.—This is a transparent spirit-thermometer, with a spherical bulb about 0.5 inch in diameter. The scale is of silvered brass, 12 inches long, 1.0 inch wide, and 0.06 inch thick, and is graduated to degrees from $-67^{\circ}.0$ to $+131^{\circ}.0$ Fahrenheit. The registering index is a short, fine steel wire, inclosed in a delicate blue-glass cylinder, with a small knob at the extremity farthest from the bulb of the thermometer.

This cylinder is drawn toward the bulb by the decrease of temperature; but when the temperature increases, the spirit flows through and around the cylinder, which remains at rest at the lowest point reached by the liquid. The end of the knob on the cylinder indicates the lowest point reached by the column of liquid. After each observation, the index is moved to the top of the column by means of a small magnet.

Solar Thermometer.—This thermometer (No. 13583) was made by L. Casella, of London, and consists of a blackened spherical bulb and its tube, inclosed within a bulb and cylinder of glass of the same form as the thermometer, but of about three times the diameter. The air has been exhausted from the inclosing bulb and cylinder, and the thermometer is confined in the center of the cylinder by having its upper end sealed to the end of the cylinder, while the lower end is fixed in a cork collar just above the junction of the bulb and cylinder. The scale is engraved on the thermometer-tube to degrees, and has a range from $-10^{\circ}.0$ to $+215^{\circ}.0$ Fahrenheit.

At about 20° from the top of the column of mercury, a small portion of air (covering about 0°.5 on the scale) is introduced into the column, so that whenever the temperature diminishes, the column of mercury above the air remains in position, indicating the highest temperature subsequent to the last observation. After each observation, the instrument is adjusted by holding it in a vertical position, tapping it gently, if necessary, until the upper portion forces the air down to the main column.

This thermometer rests in a horizontal position, in metallic crutches, 3 inches high, which are attached to an inch board 16 inches long and 5 inches wide. The board is painted green, and placed on the grass about three yards west of the Meteorological Observatory.

METEOROLOGICAL OBSERVATORY.

In 1862, a small building for the special protection of thermometers was erected about four yards southwest of the southwest corner of the south wing of the Observatory. It is constructed of wood, and painted white throughout.

Its form is octagonal, each side being 2.4 feet wide and 6.3 feet high to the eaves. The roof is of tin, unpainted on the under side. The ceiling is of thick boards, tightly fitted together, and between it and the roof there is an open space freely communicating with the open air.

On the north side is the door, which, as well as the sides, is of double louver-work, with a space of three inches between the two divisions. The sides terminate one foot from the ground, and, as the building is situated on a grass-plat, under ordinary circumstances the instrument should indicate the true temperature. This building was moved on April 9, 1874, to a point 18.8 yards west of the south wing of the main building and 17.3 yards south of the Transit Circle room.

The *dry*, *wet-bulb*, *maximum*, and *minimum* thermometers are in the Meteorological Observatory, and are all supported by means of arms and brackets to an upright metallic shaft, which is firmly secured to the ground in the center of the building.

The bulb of the minimum thermometer is 5.8 feet, those of the dry and the wet bulb thermometers are 4.2 feet, and that of the maximum thermometer is 3.2 feet above the ground.

A standard thermometer (TROUGHTON & SIMMS, No. 1) is suspended between the dry and the wet bulb thermometers, and is frequently used as a check on the other instruments.

From frequent comparisons, it has been ascertained that the errors of the minimum and wet-bulb thermometers are not appreciable, and therefore the published observations with these instruments are from the unmodified copies of the original records.

The maximum and minimum thermometers were read at the end (midnight) of each day.

DIRECTION AND FORCE OF THE WIND.

An ordinary wind-vane revolves freely on a spindle at the top of the time-ball staff, and the direction of the wind is estimated from the known azimuths of the lines of the main building of the Observatory. The velocity of the wind is recorded in

numerals, of which 0 indicates a calm, 1 a very slight breeze, and so on up to 10, which would indicate a violent hurricane.

These recorded numbers are only estimates, and at best are but approximative.

CLOUDS.

In the description of the prevailing forms of clouds, the nomenclature of HOWARD is used: C., K., S., N., being the symbols for the forms designated *cirrus*, *cumulus*, *stratus*, *nimbus;* and the letters C. S., C. K., etc., indicate the combination *cirro-stratus*, *cirro-cumulus*, etc. The portion of the sky obscured is determined by estimation after a careful scrutiny of the clouds or sky. A clear sky is denoted by 0, and a total obscuration by 10.

RAIN-GAUGE.

This instrument is placed within the inclosure for the protection of the solar thermometer. It consists of a cylinder 0.8 inch long and 4.1 inches in diameter, soldered to an inverted cone, which is loaded with lead on the outside and near the apex.

The cone rests in an aperture in the horizontal top of an oblong box, and this, aided by the weight of the lead, prevents any disturbance, even during high winds. The top of the gauge is 2.0 feet above the ground, and is free from all shelter, even in driving rain-storms.

At the apex of the cone is a small aperture, through which the water passes to a receiving-bottle in a box.

The rain is measured in a glass cylinder, with an internal diameter of 0.60 inch, so graduated that the depth of rain can be determined to within 0.002 inch.

The gauge is examined every day, and as the apex of the cone closes the mouth of the bottle except through the small aperture, there is little or no loss by evaporation.

Each inch of snow is assumed to be equal to 0.111 inch of rain; but, whenever practicable, the snow has been melted, and measured in the graduated cylinder.

No important meteors were observed in 1882.

NOTE.—Professor J. R. EASTMAN, U. S. N., was relieved from the charge of the Meteorological department, at his own request, January 1, 1885, and Lieutenant J. C. WILSON, U. S. N, directed to assume charge in addition to his other duties.

The "Results of the Observations for 1882" have been computed and arranged, under his direction, by Ensign W. S. HOGG, U. S. N.

TABLE I.

Month and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Temperature. Of the Air. By Maximum Ther.	Temperature. Of the Air. By Minimum Ther.	Temperature. Of the Air. Range.	Temperature. Of the Air. Mean of eight observations.	Temperature. Of Evaporation. Mean of eight observations.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Highest.	Temperature. In Sun's Rays. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness: 0 — 10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force: 0 — 10.
1882.	In.	In.	In.	In.	°	°	°	°	°	°	°	In.						
Jan. 1	29.813	29.739	.074	29.782	32.0	21.5	10.5	26.5	26.5	40.2	16.0	. .	C. K. S. Hazy.	C. K.	7.3	NW.	NW.	1.5
2	30.086	29.821	.265	29.950	31.5	18.2	13.3	23.4	23.4	62.0	15.0	. .	C. K. S.	C. K.	2.3	NW.	NW.	2.3
3	30.226	30.105	.121	30.154	35.1	16.0	19.1	24.0	24.0	56.0	8.0	. .	C. K.	C. K.	1.1	NW.	W. SW.	1.1
4	30.579	30.277	.302	30.482	31.0	20.0	11.0	23.0	23.0	80.0	15.0	. .	C. K. S.	C. K. Snow.	5.5	NW.	N. NE.	1.5
5	30.555	30.458	.097	30.498	25.3	18.0	7.3	21.3	21.3	36.5	15.5	.361	K. Snow.	Snow.	10.0	NE.	North.	1.0
6	30.399	30.004	.395	30.219	32.7	23.0	9.7	27.3	27.3	39.5	22.0	. .	K.	K. Mist.	10.0	NW.	South.	1.0
7	30.139	30.043	.096	30.098	41.0	25.0	16.0	31.4	31.4	74 5	25.0	. .	K. Foggy.	C. K.	3.3	NW.	East.	1.0
8	30.106	29.896	.210	30.002	40.5	32.0	8.5	34.4	34.4	43.0	28.5	.054	C. K. Foggy.	Foggy.	3.7	North.	NW.	1.0
9	30.178	29.825	.353	29.939	57.5	34.5	23.0	45.1	43.8	103.0	30.0	.016	Foggy.	C. K. S.	0.8	SW	NW.	1.2
10	30.379	30.188	.191	30.273	40.0	27.0	13.0	32.9	32.5	54.5	20.0	.816	C. K. Hazy.	C. K. N.	7.5	NW.	East.	1.0
11	30.198	29.867	.331	30.002	50.7	33.0	17.7	38.0	37.3	90.0	31.5	.036	K. N.	C. K. S.	8 8	Variable.	W.-NW.	1.2
12	30.436	30.234	.192	30.372	45.4	33.0	12.4	37.4	36.0	77.0	27.5	. .	C. K.	C. K.	9.0	NW.	NW.-SE.	1.0
13	30.308	29.610	.698	29.911	41.0	32.0	9.0	36.5	36.5	45.0	30.0	1.038	N. Snow.	K. N.	10.0	Variable.	NW.	1.0
14	30.094	29.600	.494	29.813	43.1	27.0	16.1	37.7	35.3	57.0	21.0	. .	C. K.	C. K.	3.5	NW.	NW.	2.0
15	30.072	29.881	.191	29.991	48.5	25.0	23.5	35.5	34.0	92.0	17.0	.180	C. K.	C. K. N.	5.1	SW.	South.	1.0
16	29.781	29.706	.075	29.734	55.5	40.0	15.5	49.0	48.5	63.0	42.0	.052	C. K. S.	C. K. N.	9.2	South.	East.	1.1
17	30.303	29.764	.539	30.044	42.8	26.0	16.8	33.5	32.4	39.5	25.0	1.852	N. Snow.	C. K.	9.7	North.	N.-NW.	1.6
18	30.358	30.060	.298	30.223	36.3	25.0	11.3	30.0	29.4	46.0	22.0	2.252	C. K.	C. K. N.	9.6	North.	SE.	1.0
19	30.243	29.979	.264	30.085	44.0	31.5	12.5	35.7	35.2	64.0	25.0	.902	C. K. N.	C. K. S.	6.3	North.	NW.	1.2
20	30.289	30.154	.135	30.228	38.1	31.0	7.1	33.7	33.3	48.8	27.0	. .	C. K.	C. K.	9.3	NE.	Variable.	1.0
21	30.121	29.718	.403	29.922	44.0	36.0	8.0	39.4	39.4	42.0	35.0	.807	K. N.	K. N. Foggy.	10.0	East.	South.	1.0
22	30.186	29.737	.449	29.958	43.0	24.5	18.5	36.7	32.4	87.0	24.0	. .	C. K. Hazy.	C. K. S.	8.2	NW.	NW.	3.3
23	30.532	30.192	.340	30.363	32.5	14.8	17.7	22.8	22.8	83.5	16.0	. .	C. K. S.	C. K. S.	1.7	NW.	NW.	2.5
24	30.777	30.580	.197	30.685	23.3	9.0	14.3	14.0	13.6	76.0	6.0	. .	Clear.	C. K. S.	0.7	NW.	SE.	1.4
25	30.646	30.253	.393	30.479	37.5	14.0	23.5	22.1	22.1	40.5	11.0	. .	Clear-Snow.	N.-Mist-Snow.	6.2	SW.	North.	1.0
26	30.153	29.761	.392	29.962	47.7	31.0	16.7	36.1	36.1	53.2	35.0	1.030	K. N.	C. K. N.	9.7	South.	South.	1.0
27	30.242	29.722	.520	30.005	50.7	29.5	21.2	44.6	43.1	96.0	30.0	.070	C. K.	C. K. S.	5.1	West.	NW.	1.5
28	30.234	29.857	.377	29.997	39.0	30.0	9.0	33.9	33.9	46.0	24.0	.669	C. K. S. N.	C. K. N.	9.5	Variable.	North.	1.0
29	30.215	29.827	.388	30.026	41.0	20.0	21.0	30.1	29.0	86.2	18.0	. .	C. K.	C. K.	5.4	NW.	NW.	3.0
30	30.262	30.074	.188	30.187	39.9	18.0	21.9	26.4	26.0	92.0	11.0	. .	C. K.	C. K. S.	4.6	SW.	South.	1.1
31	30.024	29.313	.711	29.626	35.0	27.0	8.0	28.9	28.9	59.0	25.0	.760	K. Snow.	K. N. S.	10.0	NE.	NW.	1.1
Means.	30.256	29.943	.313	30.097	40.2	25.6	14.6	31.9	31.4	63.9	22.5	Sum. 10.895	. . . .	. . . .	6.6	. . . .	. . . .	1.4
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.777
Lowest Pressure . .	29.313
Extreme Range . . .	1.464

	°
Maximum Temperature	57.5
Minimum Temperature	9.0
Extreme Range	48.5

Rain fell on 16 days.
Amounting to 10.895 inches.
Greatest mean force of Wind, 3.3.

WEATHER.—GENERAL REMARKS.

Jan. 1. Generally cloudy and hazy.
2. Clear and pleasant.
3. Clear and pleasant.
4. Clear first part; cloudy with snow latter part.
5. Overcast with snow.
6. Overcast and misty.
7. Overcast and foggy first part; clearing latter part.
8. Cloudy and foggy.
9. Foggy first part; clear latter part.
10. Cloudy and rainy.
11. Overcast and rainy.
12. Overcast and cloudy.
13. Overcast with snow and rain.
14. Generally clear and pleasant.
15. Clear and pleasant until 6 p. m.; afterwards rain.
16. Overcast; rainy latter part.

WEATHER.—GENERAL REMARKS.

Jan. 17. Overcast with snow and rain.
18. Overcast; rainy from 3 p. m.
19. Overcast and rainy first part; clear latter part.
20. Overcast and cloudy.
21. Overcast and rainy.
22. Cloudy.
23. Clear and pleasant.
24. Clear and cold.
25. Snow from 8 a. m.; rain at 1.10 p. m.
26. Overcast and rainy.
27. Cloudy.
28. Overcast and rainy.
29. Cloudy first part; clearing latter part.
30. Clear first part; cloudy latter part.
31. Overcast with rain and snow.

TABLE I.

Month and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Temperature. Of the Air. By Maximum Ther.	Temperature. Of the Air. By Minimum Ther.	Temperature. Of the Air. Range.	Temperature. Of the Air. Mean of eight observations.	Temperature. Of Evaporation. Mean of eight observations.	Temperature. In Sun's Rays, as shown by thermometer with blackened bulb in vacuo placed on the grass. Highest.	Temperature. In Sun's Rays, as shown by thermometer with blackened bulb in vacuo placed on the grass. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness: 0—10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force: 0—10.
1882.	In.	In.	In.	In.	°	°	°	°	°	°	°	In.						
Feb. 1	30.025	29.457	.568	29.880	41.5	25.0	16.5	31.9	31.0	104.0	24.0	.124	C. K.	C. S.	0.6	NW.	South.	1.5
2	30.078	29.879	.199	30.002	45.7	18.5	27.2	31.6	30.6	106.0	14.0	. .	Clear.	C. K. S.	2.0	SW.	Variable.	1.0
3	30.038	29.846	.212	29.986	45.5	30.0	15.0	37.3	34.9	45.6	29.6	. .	C. K.	C. K. S. Hazy.	7.4	NW.	NW.	1.2
4	30.050	29.440	.610	29.726	33.0	21.0	12.0	25.5	26.0	32 0	20.5	1.301	C. K. Snow.	Snow.	10.0	NE.	North.	1.7
5	29.902	29.547	.355	29.706	43.8	19.5	24.3	32.4	31.0	114.0	22.0	. .	C. K. Snow.	C. K. S.	4.2	NW.	Variable.	1.1
6	30.270	29.915	.355	30.159	50.5	28.0	22.5	36.5	34.7	110.0	20.0	. .	C. K.	C. S.	2.3	SW.	East.	1.1
7	30.235	29.989	.246	30.133	52.7	23.8	28.9	36.9	34.4	112.0	21.0	. .	C. K. S.	C. K. S.	5.6	East.	South.	1.0
8	30.067	29.948	.119	30.021	56.5	40.5	15.0	45.5	42.9	91.0	35.0	. .	C. K.	C. K. S.	9.1	Variable.	Variable.	1.0
9	30.012	29.554	.458	29.759	43.5	35.5	8.0	37.5	37.5	45.0	33.0	.675	K. N.	C. K. N.	10.0	NE.	North.	1.1
10	30.285	29.642	.643	29.949	46.5	32.0	14.5	39.0	36.1	98.0	30.0	. .	C. K. S.-Hazy.	Clear.	1.0	NW.	NW.	2.5
11	30.578	30.345	.233	30.502	47.5	31.0	16.5	36.8	34.2	97.0	26.0	. .	C. K.	C. K.-Hazy.	4.2	NW.	East.	1.1
12	30.566	30.341	.225	30.460	58.5	35.0	23.5	44.4	41.4	113.0	32.0	. .	C. K.	C. K. S.	8.0	S.-SE.	South.	1.3
13	30.267	29.893	.374	30.060	56.0	48.8	7.2	51.9	51.7	61.0	49.0	.433	C. K. N.	K. N.	9.7	South.	S.-SW.	1.6
14	30.153	29.971	.182	30.083	55.1	39.0	16.1	46.7	44.7	105.0	35.0	. .	C. K.	C. K.	9.0	NW.	South.	1 0
15	30.224	30.161	.063	30.185	62.3	33.0	29.3	44.4	41.8	114 0	29.0	. .	C. K.-Hazy.	C. S.	1.3	SE.	South.	1.0
16	30.195	29.799	.396	30.047	56.5	42.0	14.5	48.7	48.5	68.0	36.0	.628	C. K.-Foggy.	K. N.	6.2	South.	South.	1.3
17	30.334	29.723	.611	30.022	60.5	36.0	24 5	53.0	49.9	111.5	47.0	.166	C. K. N.	C. K. S.	4.1	NW.	NW.-NNW.	2.0
18	30.640	30.435	.205	30.569	41.5	26.0	15.5	32.5	31.0	96.0	23.0	. .	C. K.	C. K. S.	2.7	N.-NE.	East.	1.6
19	30.579	30.028	.551	30.302	41.5	26.0	15.5	35.8	35.8	46.5	30.0	.564	K. N.	K. Mist.	10.0	East.	SW.	1.1
20	30.020	29.877	.143	29.956	47.5	41.0	6.5	43.7	43 7	56.0	39.5	.150	C. K. N.	K. N. Mist.	10.0	SW.	East.	1 0
21	29.772	29.262	.501	29.538	52.5	36.0	16.5	44.6	44.6	74.3	36.0	.460	K.-Foggy.	C. K. S. N.	8.5	NE.	NW.	1.6
22	29.954	29.668	.286	29.825	42.5	31.5	11.0	34.6	32.4	103.0	29.0	. .	C. K. S.	C. K.	5.6	NW.	NW.	2.4
23	30.125	29.957	.168	30.020	40.3	27.0	13.3	31.9	29.8	76.0	25.0	. .	C. K.	C. K.	4.2	NW.	NW.	2.2
24	30.280	30.131	.149	30.204	41.5	26.5	15.0	31.2	30.3	103.0	23.0	. .	C. K.	C. K.	4.7	NW.	NW.	2.2
25	30.430	30.327	.103	30.376	45.4	23.8	21.6	34.2	31.3	100.5	20.0	. .	C. S.	Clear.	0.1	NW.	SE.	1.0
26	30.366	30.198	.168	30.276	51.5	27.0	24.5	36.4	35.1	107.0	23.0	. .	C. K. S.-Hazy.	C. K. S.	2.6	S.-SE.	SE.	1.0
27	30.208	30.119	.089	30.168	60.5	31.0	29.5	42.0	39.4	112.5	24.0	. .	C. K. S.	Clear-Hazy.	3.2	NW.	Variable.	1.0
28	30.179	29.977	.202	30.100	50.8	32.0	18.8	41.9	40.8	65.0	26.0	.084	K. Hazy.	K.	6.2	Variable.	East.	1.1
Means.	30.209	29.908	.301	30.072	48.9	30.9	18.0	38.9	37.3	88.1	28.6	Sum. 4.585	. . . .	. . . .	5.4	. . . .	. . . .	1.4
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.640
Lowest Pressure . .	29.262
Extreme Range	1.378

	°
Maximum Temperature	62.3
Minimum Temperature	18.5
Extreme Range	43.8

Rain fell on 10 days.
Amounting to 4.585 inches.
Greatest mean force of Wind, 2.5.

WEATHER.—GENERAL REMARKS.

Feb. 1. Clear and pleasant.
2. Clear and pleasant.
3. Cloudy.
4. Began to snow at 5 a. m.; about 11.5 inches fell.
5. Generally clear and pleasant.
6. Clear and pleasant.
7. Cloudy.
8. Cloudy.
9. Overcast and rainy.
10. Clear and pleasant.
11. Clear first part; overcast latter part.
12. Cloudy.
13. Overcast and rainy.
14. Cloudy.

WEATHER.—GENERAL REMARKS.

Feb. 15. Clear and pleasant.
16. Overcast, foggy, and rainy.
17. Rain first three hours; afterwards clear.
18. Clear and pleasant.
19. Overcast and rainy.
20. Overcast and rainy.
21. Overcast and rainy.
22. Cloudy during middle of day.
23. Cloudy first part; clear latter part.
24. Generally cloudy.
25. Clear and pleasant.
26. Clear and pleasant.
27. Cloudy first part; clear latter part.
28. Began to rain at 10.20 p. m.

TABLE I.

Month. and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Temperature. Of the Air. By Maximum Ther.	Temperature. Of the Air. By Minimum Ther.	Temperature. Of the Air. Range.	Temperature. Of the Air. Mean of eight observations.	Temperature. Of Evaporation. Mean of eight observations.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Highest.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness: 0 — 10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force: 0 — 10.
1882.	In.	In.	In.	In.	°	°	°	°	°	°	°	In.						
Mar. 1	29.884	29.592	.292	29.693	58.5	48.0	10.5	53.6	53.6	74.0	43.0	.394	K. N. Fog.	C. K. N.	8.3	East.	NW.	1.2
2	30.000	29.798	.202	29.913	72.0	46.5	25.5	56.2	51.4	121.5	42.0	. .	C. K.	C. K.	2.1	NW.	NW.-SW.	2.0
3	30.001	29.916	.085	29.941	68.0	46.9	21.1	55.3	48.8	117.0	44.5	. .	Clear.	C. K.	0.2	NW.	NW.	1.7
4	30.065	29.996	.069	30.028	57.0	36.2	20.8	45.7	40.5	110.0	31.0	. .	C. K.	Clear.	0.2	NW.	NW.	1.6
5	30.113	29.989	.124	30.055	52.0	32.0	20.0	41.7	39.8	67.5	27.0	.100	C. K. S.	C. K. S.-Mist.	7.4	NW.	South.	1.0
6	29.976	29.744	.232	29.846	57.5	43.9	13.6	49.0	48.3	80.5	43.5	.076	C. K. N.	C. K.	9.7	South.	West-W. NW.	1.2
7	30.438	30.023	.415	30.237	52.1	35.0	17.1	45.0	41.4	89.0	34.0	. .	C. K.	C. K.	9.6	W. NW.	North-NW.	1.5
8	30.626	30.491	.135	30.566	42.0	30.0	12.0	34.4	31.8	102.2	26.0	. .	C. K.	C. K. S.	9.3	NW.	Variable.	1.5
9	30.509	29.765	.744	30.159	45.5	33.0	12.5	37.6	37.6	53.0	32.0	.511	N.	K. Mist.	10.0	East.	South.	1.2
10	30.052	29.587	.465	29.791	56.7	40.5	16.2	47.8	44.7	111.0	37.0	. .	C. K.	C. K.	4.1	South.	NW.	2.4
11	30.261	30.069	.192	30.171	50.5	35.5	15.0	41.4	38.4	112.0	30.2	. .	C. K.	C. K. S.-Hazy.	6.1	North.	Variable.	1.6
12	30.101	29.611	.491	29.856	59.5	38.0	21.5	48.0	44.9	109.0	37.0	. .	C. K.	C. K.	8.4	Variable.	South.	1.5
13	29.896	29.546	.350	29.673	52.5	31.0	21.5	42.7	39.5	106.0	29.0	.022	C. K. N.	C. K.	6.3	Variable.	NW.	2.5
14	30.162	29.954	.208	30.120	42.5	29.0	13.5	33.2	32.1	104.0	23.0	. .	C. K. S.	C. K. S.	3.5	NW.	NW.	2.2
15	30.279	30.116	.163	30.207	33.8	27.0	6.8	30.2	29.9	45.0	25.5	. .	C. K. S.-Snow.	K. Mist.	7.4	Variable.	East.	1.1
16	30.197	29.950	.247	30.081	40.5	31.0	9.5	34.3	33.8	77.5	30.5	.390	K. Snow.	C. K. S.	9.2	East.	NW.	1.2
17	30.315	30.203	.112	30.253	50.5	35.0	15.5	39.4	36.9	118.0	33.2	. .	K.	C. K.-Hazy.	7.7	NW.-N. NW.	SE.	1.3
18	30.282	30.096	.186	30.203	39.5	35.0	4.5	36.7	36.2	52.0	35.0	.246	C. K.S.	K. N.	10.0	SE.	East-SE.	1.1
19	30.098	29.991	.107	30.036	53.0	36.5	16.5	42.2	42.1	82.0	35.0	.060	K. Mist.	C. K. S.	9.1	East.	South.	1.0
20	30.063	29.891	.172	29.994	50.0	40.0	10.0	44.7	44.4	71.0	38.5	.130	K.	K. N.	10.0	SE.	East.	1.0
21	29.811	29.568	.243	29.677	49.5	40.0	9.5	44.5	44.1	58.0	41.0	.080	K. N.	C. K. N.	9.5	Variable.	NW.	1.2
22	30.203	29.777	.426	29.948	47.5	32.0	15.5	38.3	35.8	60.0	27.5	. .	C. K.	C. K. S.	5.4	NW.	W. NW.	1.5
23	30.426	30.171	.255	30.305	52.0	28.5	23.5	38.4	36.1	111.0	23.0	. .	C. K. S.	Clear.	1.6	NW.	South.	2.0
24	30.172	29.933	.239	30.023	53.0	28.0	25.0	41.2	37.7	76.0	36.5	. .	C. K. S.	C. K. S.	7.7	South.	NW.	2.6
25	30.386	30.220	.166	30.306	45.0	23.6	21.4	31.9	30.1	101.0	18.5	. .	C. K.	C. K. S.	0.6	NW.	NW.	1.4
26	30.285	29.999	.286	30.146	62.5	32.0	30.5	45.5	42.1	113.0	27.5	. .	C. K. S.	Hazy.	2.4	South-SE.	South.	2.1
27	29.973	29.463	.510	29.722	65.3	50.2	15.1	55.9	55.6	91.0	48.5	.734	N.-Hazy.	C. K.	8.3	South.	South-S. SW.	1.7
28	29.963	29.493	.470	29.717	57.3	39.0	18.3	49.8	47.1	113.0	35.0	.478	C. K. N.	C. K. S.	7.0	South-NW.	NW.	1.6
29	30.143	30.015	.128	30.062	58.5	35.0	23.5	45.2	42.5	115.0	30.0	. .	C. K. S.-Hazy.	C. K. S.	1.7	NE.	SE.-S8E.	1.1
30	30.110	29.943	.167	29.990	68.0	41.0	27.0	51.6	46.4	121.0	35.5	. .	C. K. S.	C. S.	2.3	South.	NW.	2.0
31	30.369	30.148	.221	30.295	52.1	35.0	17.1	42.6	37.9	110.0	28.5	. .	C. K.	C. K. S.	3.0	North-NW.	NW.	1.4
Means.	30.166	29.905	.261	30.033	53.0	35.9	17.1	43.4	41.0	92.6	33.2	Sum. 3.221	. . . .	. . . .	6.1	. . . .	. . . .	1.6
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.626
Lowest Pressure . .	29.463
Extreme Range . . .	1.163

	°
Maximum Temperature	72.0
Minimum Temperature	23.6
Extreme Range	48.4

Rain fell on 12 days.
Amounting to 3.221 inches.
Greatest mean force of Wind, 2.6.

WEATHER.—GENERAL REMARKS.

Mar. 1. Overcast; foggy and rainy.
2. Clear after 3 a. m.
3. Clear and pleasant.
4. Clear and pleasant.
5. Cloudy; began to rain at 3.30 p. m.
6. Overcast, with light rain first part.
7. Cloudy.
8. Cloudy; sleet and rain at 11.45 p. m.
9. Overcast; rainy first part.
10. Generally clear.
11. Partially cloudy.
12. Cloudy.
13. Overcast; rainy until 6 a. m.
14. Clear and pleasant.
15. Cloudy and misty; began to snow at 9 a. m.
16. Overcast; snow first part.

WEATHER.—GENERAL REMARKS.

Mar. 17. Overcast and cloudy.
18. Rain and hail at intervals from 9.35 a. m.
19. Cloudy.
20. Overcast and rainy.
21. Overcast and rainy.
22. Clear first part; cloudy latter part.
23. Clear and pleasant.
24. Cloudy.
25. Clear and pleasant.
26. Clear but hazy weather.
27. Rain, with thunder and lightning in evening.
28. Overcast and rainy; clearing latter part.
29. Clear and pleasant.
30. Clear and pleasant.
31. Clear and pleasant.

TABLE I.

Month and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Temperature. Of the Air. By Maximum Ther.	Temperature. Of the Air. By Minimum Ther.	Temperature. Of the Air. Range.	Temperature. Of the Air. Mean of eight observations.	Temperature. Of Evaporation. Mean of eight observations.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Highest.	Temperature. In Sun's Rays. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness: 0—10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force: 0—10.
1882.	In.	In.	In.	In.	°	°	°	°	°	°	°	In.						
Apr. 1	30.395	30.058	.337	30.232	70.0	37.0	33.0	50.4	47.3	110.0	35.0	. .	C. K.	C. K. S.	6.1	South.	South.	2.1
2	30.057	29.874	.183	29.982	84.0	52.5	31.5	66.5	58.6	130.0	50.0	. .	Clear. Hazy.	C. K.	5.1	South.	NW.	1.7
3	30.393	30.044	.349	30.278	62.5	41.0	21.5	53.1	49.1	104.0	42.0	. .	C. K.	C. K.	7.0	NE.	SE.	1.5
4	30.381	30.054	.327	30.215	66.5	41.0	25.5	51.8	49.3	110.0	40.0	. .	K.	C. K. S. Hazy.	8.3	SE.	South.	1.3
5	30.364	30.009	.355	30.111	72.7	44.0	28.7	57.3	55.1	117.0	44.0	. .	C. K. Hazy.	C. K.	8.3	South.	NE.	1.4
6	30.327	30.262	.065	30.293	50.5	41.5	9.0	44.0	42.5	56.5	40.0	. .	K. Mist.	C. K.	10.0	East.	ESE.	1.5
7	30.222	29.939	.283	30.070	65.5	41.0	24.5	51.5	50.5	114.0	39.0	. .	N. Foggy.	C. K. S.	6.3	East.	South.	1.0
8	30.087	29.949	.138	30.007	62.5	50.0	12.5	58.0	55.6	77.2	50.5	. .	C. K.	C. K.	8.3	Variable.	South.	1.1
9	29.949	29.550	.399	29.758	60.3	47.0	13.3	50.8	50.1	89.0	45.0	.264	N.	C. K. N.	10.0	Variable.	South.	1.0
10	29.755	29.540	.215	29.639	48.5	37.0	11.5	41.7	41.7	58.0	37.0	.440	K. N.	K. N.	10.0	Variable.	NNE.	1.4
11	29.990	29.796	.194	29.893	39.0	29.0	10.0	33.4	31.7	112.0	25.0	. .	C. K. S.	C. K.	6.6	NW.	NW.	1.7
12	30.033	29.887	.146	29.944	34.9	27.0	27.9	38.4	35.9	110.0	22.0	. .	Clear.	C. K. S.	1.1	NW.	NW.	1.1
13	29.939	29.832	.107	29.893	60.0	31.0	29.0	44.8	41.4	118.0	22.5	. .	C. K. S.	C. K. S.	2.1	NW.	NW.	1.0
14	30.015	29.922	.093	29.969	54.5	35.5	19.0	44.7	42.1	90.0	33.5	. .	C. K.	C. K.	7.0	NW.	South-WNW.	1.0
15	30.021	29.951	.070	29.997	54.1	42.0	12.1	46.8	43.4	77.5	41.0	. .	C. K.	C. K.	10.0	East.	West.	1.0
16	30.122	30.025	.097	30.077	58.5	39.0	19.5	47.8	42.2	118.0	37.0	. .	K.	C. K.	4.2	NW.	NW.	1.6
17	30.174	30.047	.127	30.116	68.0	37.0	31.0	52.5	46.4	126.0	33.0	. .	Clear.	Clear.	0.0	NW.	NW.	1.5
18	30.135	29.925	.210	30.051	73.5	39.8	33.7	55.9	49.9	128.0	34.0	. .	C. K.	C. K. S.	1.0	NW.	SW.	1.0
19	29.867	29.348	.519	29.612	66.5	52.0	14.5	58.5	56.1	73.0	47.0	.098	C. K.	C. K.	8.5	South.	South-SW.	1.6
20	29.524	29.365	.169	29.420	70.0	49.0	21.0	61.0	55.3	127.5	46.0	. .	C. K.	C. K.	4.0	Variable.	NW.	1.6
21	29.911	29.568	.343	29.737	59.1	42.5	16.6	50.5	45.8	108.0	39.0	. .	C. K.	Clear. C. K.	2.6	NW.	NW.	2.4
22	30.014	29.864	.150	29.939	58.5	37.0	21.5	47.4	43.6	98.0	29.0	. .	C. K.	C. K. N.	7.1	NW.	SW.	1.1
23	29.845	29.727	.118	29.923	48.0	34.0	14.0	39.5	39.3	49.0	29.0	1.028	N.	C. K. Snow.	10.0	North.	West.	1.2
24	30.093	29.899	.194	30.010	59.5	33.0	26.5	45.0	41.3	117.0	29.0	. .	C. K.	C. K.	2.2	NW.	NW.	1.0
25	30.227	30.086	.141	30.156	60.5	35.0	25.5	47.1	43.0	119.0	29.2	. .	Clear.	C. K.	2.2	NW.	SE.	1.0
26	30.106	29.817	.289	30.090	60.8	45.5	15 3	51.5	50.4	113.0	46.0	1.582	C. K. S.	N.	9.7	SE.	East.	1.2
27	29.988	29.719	.269	29.848	61.5	43.0	18.5	50.6	48.7	100.0	41.0	.214	C. K. N.	C. K.	7.5	NW.	Variable.	1.4
28	30.034	29.876	.158	29.963	68.5	40.0	28.5	54.6	50.8	125.0	37.0	. .	Foggy.	C. K.	2.4	NW.	South.	1.3
29	29.978	29.911	.067	29.941	62.5	50.0	12.5	54.5	52.5	101.0	48.5	. .	C. K.	C. K.	9.5	North.	East.	1.0
30	29.980	29.877	.103	29.916	66.5	42.0	24.5	56.1	51.5	110.0	41.0	. .	C. K.	C. K.	5.6	NW.	NW.	1.5
Means.	30.064	29.857	.207	29.969	61.6	40.5	21.1	50.2	47.0	102.9	37.7	Sum. 3.626	. . . .	. . . .	6.1	. . . .	. . . .	1.3
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.395
Lowest Pressure . .	29.348
Extreme Range . .	1.047

	°
Maximum Temperature	84.0
Minimum Temperature	27.0
Extreme Range	57.0

Rain fell on 6 days.
Amounting to 3.626 inches.
Greatest mean force of wind, 2.4.

WEATHER.—GENERAL REMARKS.

April 1. Cloudy.
2. Clear first part; cloudy latter part.
3. Cloudy.
4. Overcast and cloudy.
5. Overcast and cloudy.
6. Overcast and cloudy.
7. Overcast; foggy first part.
8. Cloudy; began to rain at 11.30 p. m.
9. Overcast and rainy.
10. Rain, hail, and snow during day.
11. Cloudy first part; clear latter part.
12. Clear.
13. Clear.
14. Clear first part; cloudy latter part.
15. Overcast and cloudy.

WEATHER.—GENERAL REMARKS.

April 16. Cloudy first part; clear latter part.
17. Clear and pleasant. Brilliant aurora borealis in evening.
18. Clear and pleasant.
19. Cloudy, with light rain.
20. Generally clear and pleasant.
21. Clear and pleasant.
22. Hail at 6.45 a. m. Cloudy.
23. Overcast, with rain, hail, and snow.
24. Clear.
25. Clear and pleasant.
26. Overcast, with rain after 1 p. m.
27. Rainy first part; clearing latter part.
28. Generally overcast and foggy.
29. Overcast, with light passing showers at 8 a. m.
30. Cloudy first part; clearing latter.

TABLE I.

Month and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Temperature. Of the Air. By Maximum Ther.	Temperature. Of the Air. By Minimum Ther.	Temperature. Of the Air. Range.	Temperature. Of the Air. Mean of eight observations.	Temperature. Of Evaporation. Mean of eight observations.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Highest.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness: 0 — 10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force: 0 — 10.
1882.	In.	In.	In.	In.	°	°	°	°	°	°	°	In.						
May 1	30.065	29.965	.100	30.016	71.5	42.0	29.5	55.3	50.3	123.0	37.0	. .	C. K. S.	C. K.	3.0	NW.	West.	1.3
2	30.199	29.948	.251	30.037	64.5	41.6	22.9	53.4	47.4	120.0	40.5	. .	C. K.	Clear.	2.1	NW.	NW.	2.1
3	30.305	30.060	.245	30.197	64.9	36.0	28.9	49.9	44.7	120.0	30.0	. .	C. K.	C. K.	2.0	North.	South.	1.3
4	30.016	29.710	.306	29.990	76.5	47.0	29.5	60.7	57.8	88.0	45.0	.012	C. K.	C. K.	9.4	South.	SSW.	1.2
5	29.849	29.676	.173	29.721	60.7	48.0	12.7	57.3	57.2	67.0	50.0	.164	N. Hazy.	K. N.	7.4	Variable.	NE.	1.2
6	30.133	29.861	.272	29.954	52.5	42.5	10.0	48.4	48.1	62.0	41.0	.352	N.	C. K. N.	10.0	East.	NE.	1.3
7	30.342	30.181	.161	30.038	53.5	43.0	10.5	46.4	45.7	67.0	41.0	.254	K. N.	C. K. N.	10.0	North.	Variable.	1.0
8	30.324	30.117	.207	30.243	59.0	49.0	10.0	53.4	51.6	91.8	49.0	. .	C. K.	C. K.	10.0	Variable.	SSE.	1.0
9	30.020	29.722	.298	29.884	85.1	52.0	33.1	68.0	64.2	138.0	50.9	. .	C. K.	C. K. S.	5.6	Variable.	NW.	1.0
10	29.810	29.670	.140	29.749	70.5	60.0	10.5	64.8	63.7	93.0	60.0	.124	C. K.	C. K. N.	9.7	Variable.	ESE.	1.2
11	29.768	29.626	.142	29.711	58.0	47.0	11.0	53.6	53.6	62.0	47.0	.566	K. Mist.	K. N.	10.0	East.	NE.	1.6
12	29.833	29.735	.098	29.777	51.5	44.0	7.5	46.9	46.8	67.0	43.0	.140	N.	K. N. Mist.	10.0	NE.	NNE.	1.6
13	29.873	29.677	.196	29.750	50.5	44.0	6.5	46.6	46.6	57.0	41.0	.266	K. Mist.	K. N. Mist.	10.0	NE.	Variable.	1.1
14	29.626	29.453	.173	29.522	54.3	47.8	6.5	49.9	.50.0	65.0	45.0	.442	K. Mist.	N.	10.0	NNW.	NNW.	1.1
15	29.920	29.515	.405	29.702	59.5	48.0	11.5	52.8	50.7	86.0	45.0	.060	C. K.	C. K. N.	8.7	NW.	NW.	1.4
16	30.053	29.939	.114	30.010	59.5	48.0	11.5	52.3	51.7	79.5	46.0	. .	N.	C. K.	9.5	NNW.	South.	1.0
17	30.108	29.999	.109	30.162	72.0	45.0	27.0	58.0	52.7	130.0	40.5	. .	C. K. S.	C. K.	4.6	NW.	Variable.	1.2
18	30.318	30.151	.167	30.241	66.5	47.0	19.5	55.6	50.9	114.0	42.0	. .	C. K. Hazy.	C. K. Hazy.	3.7	Variable.	Variable.	1.3
19	30.308	30.125	.183	30.220	64.5	47.0	17.5	54.1	51.4	115.5	44.0	. .	C. K. Hazy.	C. K.	7.2	SE.	SE.	1.3
20	30.098	29.889	.209	29.975	77.5	49.0	28.5	61.5	57.3	130.5	47.0	. .	Hazy.	C. K. S.	3.7	South.	North.	1.0
21	29.925	29.849	.076	29.890	81.5	54 0	27.5	66.8	63.1	144.0	48.0	. .	C. K. Hazy.	C. K.	6.2	Variable.	SW.	1.0
22	29.989	29.875	.114	29.930	78.5	58.0	20.5	67.9	65.2	105.0	59.0	1.076	C. K.	C. K. N.	8.7	South.	South.	1.5
23	30.052	29.898	.154	30.016	71.5	52.0	19.5	60.0	56.2	130.0	52.0	.012	C. K. N.	C. K.	3.5	NW.	NW.	2.0
24	30.142	30.012	.130	30.075	72.3	52.0	20.3	61.8	57.4	133.0	51.0	. .	C. K. Hazy.	C. K.	4.7	NW.	Variable.	1.1
25	30.040	29.931	.109	29.962	62.5	49.0	13.5	57.5	55.1	116.0	51.0	.274	K. N.	C. K.	7.6	South.	NW.	1.4
26	30.106	29.956	.150	30.036	69.7	44.0	25.7	56.8	53.7	132.0	40.0	. .	C. K. Hazy.	C. K.	2.0	NW.	South.	1.2
27	29.967	29.788	.179	29.889	81.5	52.0	29.5	64.9	62.5	120.0	50.0	1.632	C. K.	C. K. N.	7.7	SE.	Variable.	1.3
28	29.757	29.587	.170	29.686	82.0	63.5	18.5	69.6	67.5	137.0	60.0	.182	C. K.	C. K. N.	7.5	South.	South.	1.7
29	29.888	29.606	.282	29.761	75.5	58.0	17.5	65.1	60.9	132.0	52.0	. .	C. K.	C. K.	2.7	NW.	NW.	2.0
30	30.001	29.859	.142	29.926	76.5	50.0	26.5	62.9	60.7	130.0	44.0	. .	Clear.	C. K. S.	2.0	NW.	South.	1.0
31	29.858	29.629	.229	29.782	. .	. .	. .	70.6	67.0	135.5	55.0	.110	C. K. S.	C. K. S. N.	5.8	South.	South.	1.8
Means.	30.022	29.839	.183	29.931	67.5	48.7	18.8	57.8	55.2	106.2	46.7	Sum. 5.666	. . . .	. . . .	6.6	. . . .	. . . .	1.3
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.342
Lowest Pressure . .	29.453
Extreme Range . . .	.889

	°
Maximum Temperature	85.1
Minimum Temperature	36.0
Extreme Range	49.1

Rain fell on 16 days.
Amounting to 5.666 inches.
Greatest mean force of Wind, 2.1.

WEATHER.—GENERAL REMARKS.

May 1. Clear and pleasant.
2. Clear and pleasant.
3. Clear and pleasant.
4. Cloudy with light rain.
5. Overcast and rainy.
6. Overcast and rainy.
7. Overcast and rainy.
8. Overcast and cloudy.
9. Generally cloudy.
10. Cloudy with rain latter part.
11. Overcast and rainy.
12. Overcast and rainy.
13. Overcast and rainy.
14. Overcast and rainy.
15. Cloudy first part; overcast with rain latter part.
16. Overcast and cloudy.

WEATHER.—GENERAL REMARKS.

May 17. Generally clear.
18. Clear and pleasant.
19. Generally cloudy.
20. Hazy first part; clearing latter part.
21. Cloudy and hazy.
22. Overcast with heavy rain latter part.
23. Light rain first part; afterwards clear.
24. Cloudy at times; variable weather.
25. Overcast first part; clearing latter part.
26. Clear and pleasant.
27. Heavy thunder storm at 6 p. m.
28. Light thunder storm at 5 p. m.
29. Clear and pleasant.
30. Clear and pleasant.
31. Clear first part; light rain latter part.

TABLE I.

Month and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Temperuture. Of the Air. By Maximum Ther.	Temperuture. Of the Air. By Minimum Ther.	Temperuture. Of the Air. Range.	Temperuture. Of the Air. Mean of eight observations.	Temperuture. Of Evaporation. Mean of eight observations.	Temperuture. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Highest.	Temperuture. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness: 0 — 10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force: 0 — 10.
1882.	In.	In.	In.	In.	°	°	°	°	°	°	°	In.						
June 1	29.770	29.471	.299	29.570	75.5	54.5	21.0	67.9	65.3	125.4	53.0	1.220	N.	C. K. S.	7.8	Variable.	NW.	2.0
2	29.945	29.823	.122	29.898	73.5	50.0	23.5	61.7	57.9	130.0	44.0	. .	C. K. Hazy.	C. K. S.	1.6	NW.	South-SSE.	1.0
3	29.889	29.703	.186	29.812	82.0	59.0	23.0	68.1	66.3	140.0	52.0	. .	C. K.	C. K. S.	6.0	South.	South.	1.7
4	29.851	29.610	.241	29.687	73.5	60.5	13.0	68.2	64.2	130.5	57.0	.040	C. K.	C. K.	7.2	NW.	NW.	1.8
5	29.883	29.740	.143	29.780	68.7	53.0	15.7	60.8	56.1	135.0	49.0	. .	C. K.	C. K.	5.2	NW.	NW.	2.0
6	29.965	29.904	.061	29.925	74.5	50.0	24.5	61.6	56.4	135.0	45.0	. .	C. K.	C. K. S.	1.3	NW.-WNW.	NW.	1.4
7	29.957	29.804	.153	29.891	82.7	52.0	30.7	67.5	62.0	138.0	43.5	. .	C. K.	C. K.	3.1	West.	West.	1.3
8	29.874	29.730	.144	29.809	85.4	60.2	25.2	71.5	65.9	141.0	55.0	. .	C. K.	C. K.	4.1	Variable.	SW.	1.1
9	29.787	29.731	.056	29.758	85.5	60.0	25.5	73.2	68.8	137.0	54.0	.060	C. K.	C. K.	4.5	South.	South.	1.1
10	29.756	29.638	.118	29.718	87.5	65.0	22.5	74.7	70.9	149.0	64.0	.134	C. K. S.	C. K. S.	7.5	N. W.	Variable.	1.2
11	29.961	29.712	.249	29.809	80.7	64.0	16.7	70.6	65.9	140.0	60.0	. .	C. K. S.	C. K.	5.7	Variable.	North-NE.	1.6
12	30.128	30.044	.084	30.085	79.0	60.0	19.0	68.4	64.1	146.0	58.0	. .	C. K.	C. K.	8.0	North.	S. SW.	1.0
13	30.178	30.093	.085	30.134	78.0	60.0	18.0	67.5	62.2	141.0	55.0	. .	C. K. N.	C. K.	7.0	South.	South.	1.2
14	30.104	29.894	.210	30.023	81.5	57.0	24.5	68.6	62.9	136.0	50.0	. .	C. K.	C. K.	4.3	South.	South.	1.2
15	29.870	29.654	.216	29.760	90.0	64.0	26.0	75.0	70.9	153.0	61.0	. .	C. K.	C. K. S.	5.6	South.	West.	1.2
16	29.731	29.670	.061	29.694	87.5	67.0	20.5	74.0	71.0	144.0	63.0	. .	C. K.	C. K.	6.0	SSW.	Variable.	1.1
17	29.671	29.529	.142	29.605	88.3	65.5	22.8	75.8	71.5	140.0	63.0	. .	C. K. Hazy.	C. K.	4.0	SW.	South-SW.	1.0
18	29.714	29.544	.170	29.607	89.0	67.0	22.0	77.2	72.3	147.0	63.0	. .	C. K.	C. K.	5.3	South.	West.	1.0
19	29.743	29.583	.160	29.618	87.5	67.0	20.5	75.8	72.5	132.0	66.0	.020	C. K. S.-Hazy.	C. K.	5.1	SW.	NW.	1.2
20	30.060	29.783	.277	29.949	76.7	58.0	18.7	66.8	59.5	135.0	55.0	. .	C. K.	C. K. S.	4.2	NW.	NW.	2.0
21	30.133	30.031	.102	30.084	82.0	59.5	22.5	70.0	64.7	138.0	58.0	. .	C. K.	C. K.	5.5	NW.	SE.	1.0
22	30.127	30.030	.097	30.079	85.0	61.0	24.0	72.9	68.0	145.5	56.0	. .	C. K.	C. K.	4.2	Variable.	South.	1.2
23	30.057	29.957	.100	30.016	89.5	66.5	23.0	76.1	72.0	144.0	60.5	. .	C. K. Hazy.	C. K. S.	4.3	SE.	SE.	1.2
24	29.980	29.869	.111	29.930	93.0	70.5	22.5	81.0	76.9	146.0	68.0	. .	C. K.	C. K.	5.5	South.	South.	1.2
25	29.849	29.741	.108	29.797	94.5	74.5	20.0	84.0	78.2	142.0	70.0	. .	C. K.	C. K.	6.6	South.	SW.	1.2
26	29.833	29.745	.088	29.786	92.0	75.0	17.0	81.7	75.9	149.0	72.0	.010	C. K.	C. K.	7.3	West.	West.	1.7
27	29.968	29.845	.123	29.901	91.5	67.0	24.5	77.9	68.9	147.0	63.5	. .	C. K. S.	C. K. S.	1.8	NW.	NW.	2.0
28	29.875	29.742	.133	29.800	90.5	66.0	24.5	75.3	71.1	131.0	62.0	.270	C. K. N.	C. K.	7.0	Variable.	Variable.	1.2
29	29.857	29.752	.105	29.800	87.1	69.0	18.1	76.6	69.6	142.0	66.0	. .	C. K. S.	C. K.	6.2	NW.	NE.-SE.	1.3
30	29.909	29.768	.141	29.853	84.1	64.5	19.6	73.5	68.6	140.0	61.0	. .	C. K.	C. K.	6.8	Variable.	South-SE.	1.4
Means.	29.914	29.771	.143	29.839	83.9	62.2	21.7	72.1	67.4	140.0	58.3	Sum. 1.754	. . . .	. . . .	5.3	. . . .	. . . .	1.4
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.178
Lowest Pressure . .	29.471
Extreme Range . .	.707

	°
Maximum Temperature	94.5
Minimum Temperature	50.0
Extreme Range	44.5

Rain fell on 7 days.
Amounting to 1.754 inches.
Greatest mean force of Wind, 2.

WEATHER.—GENERAL REMARKS.

June 1. Rain first part; clearing latter part.
2. Clear and pleasant.
3. Partially cloudy.
4. Cloudy.
5. Generally clear and pleasant.
6. Clear and pleasant.
7. Clear and pleasant.
8. Clear and cloudy at intervals.
9. Light passing shower at 1 p.m.
10. Cloudy, with passing shower at 7 p. m.
11. Partially cloudy.
12. Cloudy.
13. Cloudy first part; clearing latter part.
14. Clear and pleasant.
15. Generally cloudy and warm.

WEATHER.—GENERAL REMARKS.

June 16. Clear until 6 a. m.; afterwards cloudy.
17. Clear first part; cloudy latter part.
18. Partially cloudy.
19. Thunder shower at 11 a. m.
20. Clear first part; cloudy latter part.
21. Cloudy first part; clearing latter.
22. Cloudy during middle of day; otherwise clear.
23. Generally cloudy.
24. Generally clear and very warm.
25. Cloudy and very warm.
26. Warm, with light shower of rain at 8 a. m.
27. Clear and warm.
28. Cloudy, with thunder shower at 5.30 a. m.
29. Cloudy and warm.
30. Cloudy and cooler weather.

TABLE I.

Month and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Temperature. Of the Air. By Maximum Ther.	Temperature. Of the Air. By Minimum Ther.	Temperature. Of the Air. Range.	Temperature. Of the Air. Mean of eight observations.	Temperature. Of Evaporation. Mean of eight observations.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Highest.	Temperature. In Sun's Rays. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness: 0 — 10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force: 0 — 10.
1882.	In.	In.	In.	In.	°	°	°	°	°	°	°	In.						
July 1	29.734	29.568	.166	29.634	89.0	70.0	19.0	76.9	73.7	144.0	68.0	.220	C. K. N.	C. K.	8.3	South.	NW.	1.3
2	29.885	29.658	.227	29.784	80.5	62.0	18.5	70.4	64.2	134.0	62.0	.014	C. K.	C. K. S.	4.0	NW.	NW.	2.2
3	29.941	29.835	.106	29.893	83.5	58.0	25.5	69.6	62.9	138.0	50.0	. .	C. K.	C. K. N.	4.4	NW.	NW.	1.1
4	29.823	29.653	.170	29.727	74.7	60.0	14.7	66.1	63.2	123.0	60.0	2.145	C. K.	C. K. N.	9.5	SE.	NE.	2.1
5	29.817	29.703	.114	29.734	73.7	58.5	15.2	64.3	61.2	108.0	57.0	. .	C. K.	C. K. S.	6.1	North.	NW.	2.0
6	29.994	29.839	.155	29.930	80.0	58.0	22.0	67.6	63.2	140.0	54.0	. .	C. K.	C. K.	2.1	NW.	West.	1.2
7	30.045	29.963	.082	30.004	83.5	58.5	25.0	70.4	66.4	133.0	55.0	. .	C.	C. K.	3.3	South-NW.	South.	1.1
8	30.007	29.935	.072	29.977	86.5	66.0	20.5	74.6	70.7	147.0	62.5	. .	C. K.	C. K.	7.0	South.	South.	1.5
9	30.009	29.933	.076	29.972	90.0	67.4	22.6	77.8	73.1	141.0	64.0	. .	C. K.	C. K.	4.4	South.	West.	1.0
10	29.939	29.817	.122	29.887	92.5	69.5	23.0	81.4	75.8	150.2	65.0	. .	C. K.	C. K. S.	2.2	South.	South.	1.1
11	29.835	29.770	.065	29.801	89.3	73.8	15.5	79.2	75.8	122.0	68.5	.022	C. K.	C. K. N.	5.3	SW.	SW.	1.1
12	29.899	29.740	.159	29.835	89.1	68.0	21.1	77.0	72.9	152.0	64.0	.315	C. K. S.	C. K. N.	6.6	SW.	South.	1.2
13	29.861	29.682	.179	29.798	87.5	70.0	17.5	76.2	71.4	140.0	69.0	.084	C. K.	C. K. S.	7.2	West.	Variable.	1.4
14	30.000	29.885	.115	29.967	82.6	65.0	17.6	72.7	68.7	120.5	59.0	. .	C. K.	C. K. S.	7.8	NW.	NW.	1.2
15	30.150	30.070	.080	30.115	85.3	63.0	22.3	73.6	67.8	145.0	59.5	. .	C. K.	C. K.	3.0	NW.	NW.	1.4
16	30.220	30.138	.082	30.171	87.0	64.0	23.0	74.6	69.7	144.0	59.5	. .	Clear-Hazy.	C. K. S.	1.2	NW.	SE.	1.1
17	30.162	30.021	.141	30.104	86.5	67.0	19.5	75.1	71.0	142.0	62.5	. .	C. K.	C. K. S.	5.0	South.	SE.	1.2
18	30.052	29.881	.171	29.965	85.5	67.8	17.7	75.0	72.6	115.0	65.0	.042	C. K. S.	C. K.	8.6	South.	South.	1.0
19	29.900	29.853	.047	29.883	89.0	70.0	19.0	76.7	73.4	120.5	66.6	.276	C. K.	C. K. N.	6.0	SW.	West.	1.0
20	29.971	29.878	.093	29.933	90.0	66.0	24.0	74.6	70.9	140.0	63.0	.012	C. K.	C. K. S. N.	6.8	NW.	South.	1.0
21	30.082	29.869	.213	30.017	82.5	67.0	15.5	73.4	68.2	129.0	67.5	. .	C. K. S.	C. K.	9.2	Variable.	North.	1.2
22	30.134	30.067	.067	30.097	80.3	65.0	15.3	71.6	67.3	126.0	63.0	. .	K. N.	C. K.	9.4	Variable.	NW.	1.0
23	30.140	30.041	.099	30.087	88.3	62.0	26.3	73.7	67.4	144.0	59.0	. .	C. S.	C. K. Hazy.	1.1	NW.	NNW.	1.2
24	30.042	29.956	.086	30.004	91.5	64.5	27.0	76.7	70.0	148.0	61.0	. .	Clear.	C. K.	0.3	NW.	NW.	1.0
25	30.061	30.000	.061	30.029	92.5	64.0	28.5	76.9	70.3	149.0	60.2	. .	C. K. S.	C. K. S.	5.2	NW.	SE.	1.0
26	30.107	30.015	.092	30.060	95.3	69.0	26.3	79.7	73.0	149.0	62.0	. .	C. K. S.-Hazy.	C. K. S.	4.6	South.	SSW.	1.0
27	30.029	29.920	.109	29.980	92.5	74.0	18.5	80.0	75.4	137.0	70.0	.074	C. K.	C. K. N.-Hazy.	7.0	SW.	Variable.	1.0
28	29.938	29.875	.063	29.916	93.0	70.0	23.0	77.5	74.3	140.0	65.5	.994	C. K. S.	C. K. S.	5.7	West.	NW.	1.1
29	29.938	29.864	.074	29.901	91.5	69.5	22.0	77.8	74.3	142.0	65.0	.080	C. K.	C. K.	7.6	South.	NW.	1.2
30	30.016	29.916	.100	29.968	89.0	70.0	19.0	77.6	72.2	139.0	66.0	. .	C. K. S.	C. K.	5.6	NW.-NE.	East.	1.4
31	30.185	30.048	.137	30.105	86.5	69.5	17.0	76.0	69.8	141.0	69.0	. .	C. K.	C. K.	8.7	NE.	ESE.-SE.	1.4
Means.	29.997	29.884	.114	29.944	86.7	66.0	20.7	74.7	70.0	136.9	62.6	Sum. 4.218	. . . .	. . . .	5.3	. . . .	. . . .	1.2
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.220
Lowest Pressure . .	29.568
Extreme Range . . .	.652

	°
Maximum Temperature	95.3
Minimum Temperature	58.0
Extreme Range	37.3

Rain fell on 12 days.
Amounting to 4.218 inches.
Greatest mean force of Wind, 2.2.

WEATHER.—GENERAL REMARKS.

July 1. Overcast and rainy first part; clearing latter part.
2. Clear and pleasant.
3. Clear first part; raining latter part.
4. Overcast and rainy.
5. Cloudy first part; clearing latter part.
6. Clear and pleasant.
7. Clear and pleasant.
8. Clear and pleasant.
9. Clear and warm.
10. Clear and warm.
11. Warm with light shower of rain at 11.30 a. m.
12. Warm with thunder showers at 5 and 10 p. m.
13. Cloudy and pleasant weather.
14. Cloudy.
15. Clear and pleasant.
16. Clear but hazy in morning.

WEATHER.—GENERAL REMARKS.

July 17. Generally clear and pleasant.
18. Cloudy.
19. Heavy thunder-storm at 7 p. m. with electrical phenomena.
20. Generally cloudy; light rain in evening.
21. Overcast and cloudy.
22. Cloudy with sprinkle of rain at times.
23. Clear and pleasant.
24. Clear and warm.
25. Generally clear and warm.
26. Clear and very warm.
27. Cloudy and warm; light rain at 3 p. m.
28. Heavy shower of rain between 3 and 4.30 p. m.
29. Cloudy and warm.
30. Partially cloudy.
31. Cloudy.

TABLE I.

Month and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Thermometer. Of the Air. By Maximum Ther.	Thermometer. Of the Air. By Minimum Ther.	Thermometer. Of the Air. Daily Range.	Thermometer. Of the Air. Mean of eight observations.	Thermometer. Of Evaporation. Mean of eight observations.	Thermometer. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Highest.	Thermometer. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness; 0 — 10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force; 0 — 10.
1882.	In.	In.	In.	In.	°	°	°	°	°	°	°	In.						
Aug. 1	30.186	30.080	.106	30.143	74.0	66.0	8.0	69.7	67.5	85.0	65.0	1.120	C. K. N.	N.	10.0	East.	East.	1.5
2	30.010	29.885	.125	29.946	76.5	66.0	10.5	69.5	69.0	98.0	64.0	1.488	N.	C. K. N.	10.0	NE.	North.	1.4
3	29.890	29.837	.053	29.884	82.5	68.0	14.5	72.6	71.8	103.0	65.0	.014	C. K. N.	C. K. N.	9.8	North.	NE.-NNE.	1.3
4	29.962	29.874	.088	29.914	82.9	70.5	12.4	74.5	72.2	110.0	69.0	.024	C. K.	C. K.	9.1	East.	East.	1.2
5	30.050	29.993	.057	30.011	85.5	70.0	15.5	76.9	74.0	141.0	66.0	. .	C. K.	C. K. S.	9.0	North.	NE.	1.1
6	30.070	29.931	.139	30.009	87.5	72.0	15.5	77.8	75.1	143.0	70.5	. .	C. K.-Foggy.	C. K.	6.2	Variable.	SE.	1.0
7	29.941	29.739	.202	29.842	89.3	73.0	16.3	79.9	77.0	142.0	69.0	. .	C. K.	C. K.	6.0	Variable.	Variable.	1.0
8	29.758	29.554	.204	29.646	87.0	70.5	16.5	76.4	74.5	139.0	69.0	.064	C. K.-Hazy.	C. K.	5.6	NW.	SW.	1.0
9	29.805	29.575	.220	29.687	86.5	67.0	19.5	75.0	70.4	141.0	61.0	. .	C. K. S.	C. K.	3.3	NW.	Variable.	1.3
10	29.909	29.846	.063	29.890	84.1	62.5	21.6	71.8	65.7	135.0	57.0	. .	C. K.	C. K.	4.1	NW.	SW.	1.2
11	30.118	29.996	.122	30.061	81.0	59.0	22.0	68.9	65.1	141.0	51.0	. .	C. K.	C. K.	2.3	NW.	Variable.	1.1
12	30.049	29.900	.149	29.971	84.5	66.5	18.0	72.8	70.7	120.0	65.0	.164	C. K. N.	C. K.	8.0	South.	Variable.	1.0
13	29.974	29.898	.076	29.938	88.8	65.0	23.8	76.0	70.9	140.0	63.0	. .	C. K.	C. K.	1.8	NW.	Variable.	1.1
14	29.978	29.906	.072	29.937	90.5	66.0	24.5	76.8	72.4	145.0	62.0	. .	C. K.-F'y-H'y.	C. K.	2.1	South.	South.	1.0
15	29.941	29.883	.058	29.909	90.0	68.0	22.0	77.4	73.3	142.0	65.0	. .	C. K. S.	C. K.	3.6	Variable.	SE.	1.1
16	29.879	29.788	.091	29.839	90.3	72.5	17.8	77.9	72.8	141.0	70.0	.170	C. K.	C. K. N.	6.6	Variable.	Variable.	1.0
17	29.804	29.750	.054	29.780	89.0	72.0	17.0	78.5	75.3	135.5	70.0	. .	C. K.	C. K.	8.2	SE.	West.	1.1
18	29.939	29.810	.129	29.877	85.0	66.5	18.5	74.7	68.3	82.4	67.0	. .	C. K. S.	C. K.	5.0	NW.	North.	2.0
19	30.081	29.970	.111	30.040	82.5	59.0	23.5	69.7	63.1	134.5	56.0	. .	C. K. S.	C. K.	2.1	North.	NW.	1.3
20	30.238	30.120	.118	30.190	83.5	58.0	25.5	68.9	64.7	137.0	54.8	. .	C. K. S.	C. K.	5.0	NW.	NNE.	1.1
21	30.236	30.116	.120	30.181	85.0	56.0	29.0	70.6	65.1	141.0	54.0	. .	C. K. S.	C. K.	2.6	Variable.	SE.	1.0
22	30.108	30.017	.091	30.061	73.7	65.3	8.4	69.0	67.2	85.0	61.0	.162	C. K.	C. K. N.-Mist.	8.2	South.	East.	1.0
23	30.086	29.893	.133	29.965	78.5	66.0	12.5	71.5	70.8	117.0	63.0	.168	C. K.	N.-Hazy.	8.6	East.	Variable.	1.0
24	29.874	29.802	.072	29.840	87.8	67.0	20.8	76.2	71.9	137.0	64.0	. .	C. K. Hazy.	C. K.	2.6	NW.	NW.	1.6
25	29.887	29.834	.053	29.869	89.0	65.0	24.0	76.4	71.5	140.0	63.0	. .	C. K.	C. K.	1.6	NW.	NW.	1.0
26	29.940	29.886	.054	29.918	86.5	67.0	19.5	74.4	72.2	115.0	63.0	.560	C. K.	C. K. N.	10.0	SW.	SW.	1.1
27	29.902	29.789	.113	29.856	81.5	69.0	12.5	72.9	72.3	99.0	67.0	.150	K. N.	C. K. S. N.	9.7	NE.	SE.	1.2
28	29.976	29.760	.216	29.856	73.5	60.0	13.5	68.9	67.6	100.5	59.0	1.000	K. N.	C. K.-Mist.	9.0	NE.	NE.	2.0
29	30.134	29.987	.147	30.053	79.5	57.5	22.0	67.0	62.9	138.0	54.0	. .	C. K.	C. K.	3.2	North.	East.	1.2
30	30.198	30.120	.078	30.154	78.7	55.2	23.5	66.3	63.0	136.0	50.5	. .	C. K.	C. K.	4.5	Variable.	SE.	1.0
31	30.120	29.979	.141	30.047	77.0	63.0	14.0	69.6	69.4	77.0	60.0	.314	C. K. N.	C. K. S.	9.0	East.	SE.	1.2
Means.	29.999	29.888	.111	29.946	83.6	65.5	18.1	73.2	69.9	123.9	62.5	Sum. 5.398	. . . .	. . . .	6.0	. . . .	. . . .	1.2
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.238
Lowest Pressure . .	29.554
Extreme Range . . .	.684

	°
Maximum Temperature	90.5
Minimum Temperature	55.2
Extreme Range	35.3

Rain fell on 13 days.
Amounting to 5.398 inches.
Greatest mean force of Wind, 2.

WEATHER.—GENERAL REMARKS.

Aug. 1. Overcast and rainy.
2. Overcast and rainy.
3. Overcast and rainy.
4. Cloudy, with light shower at 10.40 a. m.
5. Cloudy.
6. Cloudy; foggy first part.
7. Generally cloudy and warm.
8. Thunder shower at 5 p. m.; cloudy and warm.
9. Clear and pleasant.
10. Generally clear and pleasant; meteoric shower.
11. Clear and pleasant; meteoric shower.
12. Cloudy, with rain at 2.30 a. m.; clear last hour.
13. Clear and pleasant.
14. Foggy and hazy first part; clear last part.
15. Clear and warm.
16. Cloudy, with thunder shower at 4.30 p. m.

WEATHER.—GENERAL REMARKS.

Aug. 17. Cloudy and warm.
18. Clear and pleasant.
19. Clear and pleasant.
20. Clear and pleasant.
21. Clear and pleasant.
22. Cloudy, with rain in afternoon.
23. Cloudy.
24. Clear and warm.
25. Clear and warm.
26. Overcast, with heavy rain last six hours.
27. Overcast and rainy.
28. Overcast, with heavy rain.
29. Clear and pleasant.
30. Clear and pleasant.
31. Overcast, with rain from 9 a. m.

TABLE I.

Month and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Temperature. Of the Air. By Maximum Ther.	Temperature. Of the Air. By Minimum Ther.	Temperature. Of the Air. Range.	Temperature. Of the Air. Mean of eight observations.	Temperature. Of Evaporation. Mean of eight observations.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Highest.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness: 0 — 10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force: 0 — 10.
1882.	In.	In.	In.	In.	°	°	°	°	°	°	°	In.						
Sept. 1	30.016	29.946	.070	29.993	88.0	66.0	22.0	75.7	73.0	135.0	61.0	. .	C. K.	C. K.	3.2	NW.	South-NW.	1.0
2	30.013	29.939	.074	29.980	90.5	71.0	19.5	78.0	74.9	138.5	68.0	. .	C. K. Hazy.	C. K. S.	2.5	South.	South.	1.0
3	30.019	29.962	.057	29.992	89.0	71.0	18.0	77.7	75.2	127.0	68.0	1.440	C. K.	C. K. N.	7.6	South-SSE.	SW.	1.1
4	30.034	29.968	.066	29.998	85.5	69.0	16.5	75.8	73.0	133.0	65.0	. .	C. K. N.	C. K.	6.5	NW.	NW.	1.0
5	30.076	29.993	.083	30.040	83.5	65.4	18.1	72.6	69.2	124.5	60.0	. .	C. K. S.	C. K.	2.2	NW.	NW.	1.0
6	30.091	29.996	.095	30.046	82.5	61.0	21.5	71.1	68.4	122.0	59.0	. .	C. K.	C. K.	3.7	NW.	NE.-East.	1.1
7	30.013	29.921	.092	29.971	81.0	62.5	18.5	71.0	68.4	133.5	57.0	. .	C. K. S.	C. K.	5.6	North.	SE.	1.0
8	29.915	29.839	.076	29.876	83.5	65.0	18.5	72.2	70.3	147.0	61.0	. .	C. K.	C. K. S.	8.2	SE.	South.	1.1
9	29.923	29.863	.060	29.890	78.7	65.0	13.7	71.1	69.5	118.0	64.0	. .	C. K.	C. K.	8.3	NW.	Variable.	1.2
10	29.923	29.774	.149	29.871	77.5	64.5	13.0	68.9	66.9	99.0	61.0	. .	C. K.	C. K.	9.6	NE.-East.	East.	1.1
11	29.710	29.490	.220	29.557	73.5	61.0	12.5	67.1	66.9	82.5	59.0	2.242	N.	N.	10.0	NE.	NW.	2.0
12	30.030	29.639	.391	29.745	75.5	56.0	19.5	73.5	59.0	137.5	53.0	. .	C. K. N.	C. K.	2.2	NW.	NW.	2.0
13	30.134	29.985	.149	30.059	77.5	52.0	25.5	64.2	60.2	130.0	48.2	. .	Clear. Foggy.	C. K. S.	0.8	NW.	SE.	1.3
14	29.979	29.679	.300	29.837	83.5	62 0	21.5	71.6	68.3	135.0	56.5	. .	C. K. S. Hazy.	C. Hazy.	0.4	Variable.	South.	1.3
15	29.929	29.742	.187	29.847	80.3	61.0	19.3	71.5	66.2	133.0	55.0	. .	Clear.	Clear.	0.1	NW.	NW.	1.4
16	30.066	29.943	.123	29.985	79.5	56.0	23.5	66.1	62.9	128.0	52.0	. .	Clear. Hazy.	C. K.	1.2	NW.	NW.	1.0
17	30.027	29.910	.117	29.964	82.3	58.5	23.8	69.1	66.9	140.0	52.5	. .	C. K. S.	C. K. Hazy.	1.8	NW.	Variable.	1.0
18	29.946	29.897	.049	29.930	85.1	63.0	22.1	70.7	68.4	118.0	58.0	. .	C. K.	C. K.	5.8	NW.	South-SW.	1.0
19	29.965	29.833	.132	29.921	90.0	65.0	25.0	76.1	72.8	138.0	60.0	. .	Clear. Hazy.	C. K. S. Hazy.	0.5	SW.	S. SW.	1.0
20	29.968	29.878	.090	29.928	89.5	68.0	21.5	75.6	73.6	141.0	62.0	1.992	C. K. S.	C. K. N.	4.0	SW.	NW.	1.0
21	30.041	29.985	.056	30.006	86.0	66.0	20.0	74.0	72.2	133.0	62.0	. .	C.K. F'y. H'y.	C. K.	4.6	NW.	SE.	1.2
22	29.989	29.868	.121	29.928	73.0	64.5	8.5	69.8	69.4	83.0	62.0	.426	C. K. N.	K. N.	9.6	SE.	NW.	1.2
23	30.007	29.875	.132	29.924	68.3	55.5	12.8	61.0	59.7	110.5	50.0	1.100	K. N.	C. K. S.	7.7	NW.	NW.	2.2
24	30.121	30.029	.092	30.085	72.7	52.6	20.1	61.4	57.4	122.0	48.0	. .	C. K. S.	C. K.	6.3	NW.	NNW.	1.7
25	30.139	30.090	.049	30.110	63.0	56.0	7.0	59.7	57.1	71.0	55.0	.316	C. K. N.	K. N.	10.0	North.	N. NNW.	1.6
26	30.075	29.990	.085	30.021	60.5	52.5	8.0	56.7	56.7	65.5	52.5	.984	K. N.	N.	10.0	NNE.	North.	1.3
27	30.045	29.962	.083	30.004	60.5	55.0	5.5	56.5	56.1	66.0	54.5	.230	K. N.	K. N.	10.0	NE.	NE.	1.2
28	30.109	30.018	.091	30.056	66.0	49.5	16.5	55.6	54.2	99.0	46.0	. .	K. N.	C. K.	7.0	North.	NW.	1.2
29	30.184	30.116	.068	30.146	73.0	45.5	27.5	57.1	55.4	127.0	42.0	. .	Clear. Foggy.	C. K.	0.5	NW.	NW.	1.0
30	30.198	30.125	.073	30.165	74.5	48.6	25.9	60.6	58.5	123.5	45.0	. .	Foggy.	C. K.	3.0	NW.	Variable.	1.0
Means.	30.023	29.909	.114	29.962	78.5	60.3	18.2	68.4	65.7	118.7	56.6	Sum. 8.730	. . . .	. . . .	5.1	. . . .	. . . .	1.2
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.198
Lowest Pressure . .	29.490
Extreme Range . . .	.708

	°
Maximum Temperature	90.5
Minimum Temperature	45.5
Extreme Range	45.0

Rain fell on 8 days.
Amounting to 8.730 inches.
Greatest mean force of Wind, 2.2.

WEATHER.—GENERAL REMARKS.

Sept. 1. Clear and warm.
2. Clear and warm.
3. Heavy thunder storm at 7.45 p. m.; warm.
4. Generally cloudy and warm.
5. Clear and pleasant.
6. Clear and pleasant.
7. Clear first part; cloudy latter part.
8. Cloudy.
9. Cloudy.
10. Overcast; began to rain at 4 p. m.
11. Overcast with heavy rain and thunder and lightning.
12. Cloudy first part; clearing latter part.
13. Generally clear; foggy in the morning.
14. Clear; hazy at times.
15. Clear.

WEATHER.—GENERAL REMARKS.

Sept. 16. Clear; hazy at times.
17. Clear; hazy in the evening.
18. Clear except during middle of day.
19. Clear and pleasant.
20. Clear first part; showery latter part with thunder and lightning.
21. Foggy first part; cloudy latter part.
22. Overcast; began to rain at 8.35 a. m.
23. Heavy rain first part; clearing latter part.
24. Clear first part; cloudy latter part.
25. Cloudy with rain from 2.35 p. m.
26. Overcast with heavy rain.
27. Overcast and rainy.
28. Overcast first part; clear latter part.
29. Clear except at 3 a. m. when foggy.
30. Foggy first part; cloudy latter part.

TABLE I.

Month and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Temperature. Of the Air. By Maximum Ther.	Temperature. Of the Air. By Minimum Ther.	Temperature. Of the Air. Range.	Temperature. Of the Air. Mean of eight observations.	Temperature. Of Evaporation. Mean of eight observations.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Highest.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness: 0 — 10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force: 0 — 10.
1882.	In.	In.	In.	In.	°	°	°	°	°	°	°	In.						
Oct. 1	30.148	30.068	.080	30.112	79.0	56.0	23.0	64.0	62.2	130.0	52.0	. .	C. K.	C. K. S.	5.5	Variable.	Variable.	1.0
2	30.160	30.095	.065	30.115	76.5	52.5	24.0	62.1	59.4	126.0	50.0	. .	C. K.	C. K.	3.2	NW.	NW.	1.0
3	30.174	30.100	.074	30.134	76.1	51.5	24.6	62.3	60.1	138.0	47.5	. .	C. K. S.	C. K.	3.7	NW.	Variable.	1.0
4	30.210	30.150	.060	30.177	74.0	53.0	21.0	61.7	61.4	123.0	50.5	. .	Foggy.	C. K. S.	1.2	NW.	NW.	1.0
5	30.230	30.168	.062	30.197	77.9	53.0	24.9	63.3	61.2	127.0	45.5	. .	Clear-Foggy.	C. K.	4.0	NW.	SE.	1.0
6	30.257	30.179	.078	30.216	78.2	56.0	22.2	64.4	61.9	128.0	53.0	. .	Clear-Foggy.	C. K. Hazy.	1.6	Variable.	South.	1.0
7	30.192	30.050	.142	30.127	76.5	52.0	24.5	59.5	58.4	120.0	48.0	. .	Clear-Foggy.	Clear.	3.0	South.	SE.	1.0
8	30.099	29.943	.156	30.008	79.1	55.0	24.1	63.6	61.7	129.0	49.5	. .	Clear-Foggy.	Clear.	1.5	South.	South.	1.0
9	29.951	29.878	.073	29.920	81.5	57.5	24.0	66.9	64.7	129.0	52.0	.024	C. K.-Hazy.	C. K.	2.3	SW.	South.	1.0
10	29.975	29.869	.106	29.931	76.0	58.0	18.0	65.7	62.9	126.0	54.0	. .	Clear-Foggy.	C. K. Hazy.	3.1	South.	SE.	1.1
11	29.906	29.800	.106	29.839	80.5	58.0	22.5	68.1	66.4	118.0	59.0	.044	C. K. S.	C. K. N.	7.1	South.	North.	1.5
12	30.064	29.941	.123	29.996	60.5	54.5	6.0	57.5	57.2	62.0	54.0	. .	C. K. N.	K. N.	10.0	NE.	North-NE.	1.7
13	30.064	29.930	.134	30.004	62.0	54.0	8.0	57.1	56.9	72.9	52.0	.016	K. Mist.	K. Mist.	10.0	North.	North.	1.5
14	29.965	29.880	.085	29.930	72.5	52.0	20.5	63.1	59.4	118.0	52.5	. .	C. K.	C. K.	4.8	North.	NW.	1.8
15	30.088	29.996	.092	30.027	73.0	49.0	24.0	58.3	54.4	128.0	44.0	. .	Clear.	Clear.	0.0	NW.	NW.	1.3
16	29.995	29.881	.114	29.932	75.5	49.5	26.0	60.9	59.3	100.0	45.0	. .	C. S.	C. K. N.	6.2	NW.	NE.	1.6
17	29.866	29.821	.045	29.968	72.5	63.0	9.5	66.2	66.2	67.0	61.5	.056	N. Hazy.	C. K.	8.3	North.	NW.	1.0
18	29.915	29.852	.063	29.874	79.5	61.0	18.5	68.4	67.1	95.0	59.0	. .	C. K.	C. K.	6.5	NW.	NW.	1.0
19	29.975	29.821	.154	29.881	65.0	55.2	9.8	60.9	60.9	67.0	55.0	. .	C. K.	C. K.	7.5	NW.	North.	1.2
20	30.114	29.989	.125	30.060	58.5	45.0	13.5	51.4	48.9	77.0	39.5	. .	C. K.	C. K.	7.7	NW.	North.	1.2
21	30.196	30.103	.093	30.156	62.5	43.6	18.9	50.4	47.7	112.0	41.5	. .	C. K.	C. K.	6.5	NW.	NE.	1.3
22	30.153	30.027	.126	30.090	60.5	47.0	13.5	53.7	51.6	89.0	45.0	. .	K.	C. K.	10.0	North.	NE.	1.0
23	30.014	29.783	.231	29.894	65.5	53.5	12.0	56.8	55.1	101.0	50.0	. .	C. K.	C. K.	8.6	East.	Variable.	1.0
24	29.881	29.697	.184	29.765	59.7	46.0	13.7	52.9	49.9	82.5	43.5	. .	C. K. S.	C. K.	6.5	NW.	NW.	2.0
25	30.047	29.912	.135	29.969	64.0	42.0	22.0	50.8	46.5	114.0	38.5	. .	Clear.	C. K.	2.2	NW.	NW.	1.6
26	29.996	29.878	.118	29.916	76.0	45.0	31.0	57.6	54.7	108.0	39.0	. .	C. K.	C. K. S.	9.7	South.	NW.	1.0
27	30.073	29.939	.134	30.014	64.5	48.0	16.5	54.1	52.2	63.0	43.0	. .	C. K. Hazy.	C. K. Hazy.	4.0	Variable.	NE.	1.1
28	30.128	29.974	.154	30.079	56.0	49.5	6.5	52.0	51.9	55.0	48.0	. .	K.	K. Mist.	10.0	North.	NE.	1.3
29	30.077	29.849	.228	29.944	72.5	55.0	17.5	60.2	59.2	88.0	53.0	.140	C. K. N.	C. K. N.	9.7	SE.	SW.	1.6
30	30.024	29.901	.123	29.968	74.5	54.0	20.5	62.4	60.1	119.0	53.0	. .	C. K. S. Foggy.	C. K.-Hazy.	5.0	SW.	East.	1.0
31	30.014	29.924	.090	29.977	72.5	53.5	19.0	61.2	60.5	73.0	47.0	. .	K. Foggy.	C. K. Foggy.	3.1	Variable.	South.	1.1
Means.	30.063	29.948	.115	30.007	71.0	52.3	18.7	59.9	58.1	102.8	49.2	Sum. .280	. . . .	. . . .	5.6	. . . .	. . . .	1.2
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.257
Lowest Pressure . .	29.697
Extreme Range . . .	.560

	°
Maximum Temperature	81.5
Minimum Temperature	42.0
Extreme Range	39.5

Rain fell on 5 days.
Amounting to .280 inches.
Greatest mean force of Wind, 2.0.

WEATHER.—GENERAL REMARKS.

Oct. 1. Cloudy first part; clearing latter part.
2. Clear and pleasant.
3. Clear and pleasant.
4. Foggy first part; clear latter part.
5. Foggy from 6 a. m. to noon; then clear.
6. Foggy and clear at intervals.
7. Foggy first part; clear latter part.
8. Foggy first part; clear latter part.
9. Hazy until 6 a. m.; light rain at 6 p. m.
10. Foggy at 9 a. m.
11. Cloudy, with rain at 9 p. m.
12. Overcast and rainy.
13. Cloudy.
14. Cloudy first part; clearing latter part.
15. Perfectly clear day.
16. Clear first part; cloudy latter part, with light rain.

WEATHER.—GENERAL REMARKS.

Oct. 17. Overcast; rainy first part.
18. Generally cloudy.
19. Cloudy first part; clearing latter part.
20. Cloudy first part; clearing latter part.
21. Cloudy first part; clearing latter part.
22. Overcast and cloudy.
23. Generally cloudy.
24. Cloudy first part; clearing latter part.
25. Clear and pleasant.
26. Cloudy.
27. Light shower at 11.30 a. m.
28. Overcast and cloudy.
29. Cloudy, with rain at times.
30. Cloudy and foggy first part; clear latter part.
31. Cloudy and foggy.

TABLE I.

Month and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Temperature. Of the Air. By Maximum Ther.	Temperature. Of the Air. By Minimum Ther.	Temperature. Of the Air. Range.	Temperature. Of the Air. Mean of eight observations.	Temperature. Of Evaporation. Mean of eight observations.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Highest.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness: 0 — 10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force: 0 — 10.
1882.	In.	In.	In	In.	°	°	°	°	°	°	°	In.						
Nov. 1	30.058	29.958	.100	30.008	80.5	60.5	20.0	67.0	64.5	79.0	58.0	. .	C. K.	C. K. S.	7.3	SW.	Variable.	1.0
2	30.366	30.057	.309	30.211	61.5	43.8	17.7	54.6	52.3	67.0	41.0	1.212	C. K. N.	C. K.	7.3	Variable.	North-NE.	1.6
3	30.482	30.297	.185	30.395	51.5	33.0	18.5	41.4	38.5	104.0	27.5	. .	Clear.	C. K.	1.6	NE.	NE.	1.5
4	30.296	30.211	.085	30.249	51.0	40.0	11.0	44.3	42.7	59.0	38.5	. .	C, K.	C. K. N.	10.0	NE.	NE.-NNE.	1.6
5	30.327	30.233	.094	30.036	53.5	33.5	20.0	41.4	39.1	105.0	30.0	. .	C.	C. K.	1.1	North.	NE.	1.3
6	30.280	30.191	.089	30.237	50.9	29.0	21.9	37.7	36.2	85.5	24.0	. .	C. K.	C. K.	5.0	NW.	SW.	1.0
7	30.215	30.147	.068	30.185	53.0	41.0	12.0	44.6	43.3	75.0	38.0	.036	C. K.	C. K. N.	9.8	SE.	NE.	1.3
8	30.227	30.139	.088	30.181	60.5	40.0	20.5	47.8	46.4	98.2	37.0	. .	C. K. S.	C. K.	6.2	NW.	NW.	1.0
9	30.181	30.012	.169	30.109	62.5	36.0	26.5	47.2	46.0	86.0	35.0	. .	Fog.	C. K. N.	4.5	South.	SE.	1.0
10	30.134	29.987	.147	30.035	61.0	50.5	10.5	55.0	54.3	76.5	48.0	.100	C. K. N.	C. K. S.	8.0	Variable.	NW.	1.0
11	30.227	30.133	.094	30.172	60.5	50.0	10.5	53.7	53.2	71.0	44.5	. .	C. K.	C. K. S.	8.7	NW.	South.	1.0
12	30.061	29.863	.198	29.993	72.5	50.5	22.0	59.2	57.6	114.0	48.0	. .	Hazy-K.	C. K. S.	4.1	SW.	South.	1.1
13	29.873	29.656	.217	29.782	70.0	39.0	31.0	55.7	54.4	82.0	38.0	.160	C. K. N.	C. K. N.	9.5	SE.	NW.	2.0
14	30.059	29.916	.143	29.974	45.5	34.2	11.3	38.2	35.8	104.0	29.0	. .	C. K. S.	C. K.	4.2	NW.	NW.	1.5
15	30.140	29.879	.261	29.995	52.5	33.0	19.5	40.4	38.2	100.0	28.0	. .	C. K.	C. K.-Hazy.	3.6	Variable.	North.	1.0
16	30.297	30.185	.112	30.236	54.5	31.0	23.5	40.4	38.8	100.0	26.0	. .	C. K.	C. K.	3.5	NW.	SE.	1.0
17	30.213	30.061	.152	30.137	52.0	41.5	10.5	45.9	44.8	65.0	41.5	.016	K. N.	C. K.	10.0	SE.	NNW.	1.0
18	30.189	30.042	.147	30.139	44.5	34.0	10.5	39.4	37.8	52.0	33.0	. .	C. K.	C. K.	8.8	NNW.	North.	1.5
19	30.134	30.063	.071	30.093	45.0	27.0	18.0	34.4	32.4	99.5	20.5	. .	C. K. S.	Clear.	1.0	NW.	NW.	1.5
20	30.070	30.000	.070	30.034	47.5	28.5	19.0	36.9	34.6	65.0	24.0	. .	C. K.	C. K.	5.7	NW.	North-NW.	1.0
21	29.987	29.801	.186	29.892	45.5	24.6	20.9	32.0	30.8	85.0	18.0	. .	C. K.	C. K. S.	5.3	NW.	Variable.	1.0
22	30.027	29.851	.176	29.934	50.0	27.0	23.0	35.7	33.7	95.0	22.0	. .	Clear-Hazy.	C. K.	1.7	NW.	NW.	1.5
23	30.041	29.873	.168	29.967	54.3	25.5	28.8	37.9	36.0	92.0	19.0	. .	C. S.	C. K.	1.0	NW.	SW.	1.1
24	30.180	29.851	.329	29.982	45.5	31.5	14.0	37.5	34.2	92.5	25.0	. .	C. K.	C. K.	1.7	South-NW.	NW.	1.8
25	30.273	30.189	.084	30.261	43.5	27.5	16.0	33.7	31.4	91.0	19.5	. .	C. K.	Clear.	2.1	West.	NW.	1.5
26	30.265	29.812	.453	30.053	39.5	24.5	15.0	31.6	31.1	35.0	18.0	. .	N. W.	South.	1.3	NW.	South.	1.3
27	30.161	29.835	.326	30.001	46.0	26.5	19.5	38.4	35.1	99.0	24.0	. .	C. K.	C. K.	5.2	West.	NW.	1.5
28	30.181	29.923	.258	30.094	32.8	24.0	8.8	27.4	27.2	38.5	18.5	. .	C. K.	C. K.-Snow.	9.1	North.	NE.	1.1
29	29.929	29.855	.074	29.892	34.0	25.0	9.0	28.0	28.6	43.0	23.0	.230	Snow.	C. K.	9.5	NNW.	NW.	1.4
30	30.195	29.945	.250	30.097	36.0	24.0	12.0	29.1	29.1	68.0	19.0	. .	C. K. S.	C. K.	2.7	NW.	NW.	1.4
Means.	30.169	29.999	.170	30.079	51.9	34.5	17.4	41.9	40.3	80.9	30.5	Sum. 1.754	. . . .	. . . .	5.3	. . . .	. . . .	1.3
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.482
Lowest Pressure . .	29.656
Extreme Range . . .	.826

	°
Maximum Temperature	80.5
Minimum Temperature	24.0
Extreme Range	56.5

Rain fell on 6 days.
Amounting to 1.754 inches.
Greatest mean force of Wind, 2.0.

WEATHER.—GENERAL REMARKS.

Nov. 1. Generally cloudy.
2. Overcast first part, with rain; clearing latter part.
3. Clear and cool.
4. Overcast and cloudy.
5. Clear and pleasant.
6. Clear first part; cloudy latter part.
7. Overcast. Began to rain at 4.35 p. m.
8. Cloudy first part; clear latter part.
9. Heavy fog in morning; cloudy in evening.
10. Cloudy and raining until 6 a. m.
11. Cloudy.
12. Hazy first part; clear latter part.
13. Overcast and rainy during the day.
14. Clear and pleasant.
15. Cloudy first part; clearing latter part.

WEATHER.—GENERAL REMARKS.

Nov. 16. Clear and pleasant.
17. Cloudy; began to rain at 4 a. m.
18. Generally cloudy.
19. Brilliant aurora borealis in evening; clear.
20. Generally clear and pleasant.
21. Generally clear and pleasant.
22. Clear; hazy in the morning.
23. Clear and pleasant.
24. Clear and pleasant.
25. Clear and pleasant.
26. Generally cloudy.
27. Clear, except between 3 a. m. and 6 a. m.
28. Began to snow at 2 p. m.
29. Snowing until 9 a. m. Cloudy.
30. Clear and cool.

TABLE I.

Month and Day.	Barometer. Corrected Readings. Highest.	Barometer. Corrected Readings. Lowest.	Barometer. Corrected Readings. Range.	Barometer. Corrected Readings. Mean of eight observations.	Temperature. Of the Air. By Maximum Ther.	Temperature. Of the Air. By Minimum Ther.	Temperature. Of the Air. Range.	Temperature. Of the Air. Mean of eight observations.	Temperature. Of Evaporation. Mean of eight observations.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Highest.	Temperature. In Sun's Rays, as shown by Thermometer with blackened bulb in vacuo placed on the grass. Lowest.	Amount of Rain and Melted Snow collected in gauge two feet above ground.	Clouds. Prevailing. A. M.	Clouds. Prevailing. P. M.	Clouds. Mean amount of Cloudiness: 0 — 10.	Wind. General Direction. A. M.	Wind. General Direction. P. M.	Wind. Mean Force: 0 — 10.
1882.	In.	In.	In.	In.	°	°	°	°	°	°	°	In.						
Dec. 1	30.194	30.025	.169	30.097	44.5	26.5	18.0	33.4	32.2	70.5	25.0	. .	C. K.	C. K.S. Hazy.	5.7	SW.	SW.	1.0
2	29.998	29.747	.251	29.853	51.5	26.2	25.3	37.0	35.7	50.0	27.5	. .	C. K. Hazy.	C. K.	4.0	Variable.	SE.	1.0
3	30.249	29.891	.358	30.101	38.0	22.0	16.0	30.4	29.1	70.0	20.0	. .	C. K.	C. K.	1.4	NW.	NW.	2.6
4	30.285	30.081	.204	30.204	39.5	19.5	20.0	27.7	26.9	59.0	15.0	. .	C. K. S.	C. K. S.	4.4	NW.	South.	1.0
5	30.140	29.868	.272	30.037	48.5	31.0	17.5	38.8	37.1	61.0	30.0	. .	C. K.	C. K. S.	9.3	South.	South.	1.1
6	30.121	29.809	.312	30.018	50.7	33.5	17.2	44.3	41.7	65.0	27.0	. .	C. K.	C. K.	4.1	South.	West.	1.4
7	30.319	29.878	.441	30.074	42.5	10.5	32.0	27.6	26.5	43.0	7.0	. .	C. K.	C. K. S.	6.0	SE.	NW.	2.2
8	30.482	30.359	.123	30.412	26.5	8.0	18.5	14.4	15.5	69.5	5.0	. .	Clear.	C. K.	2.6	NW.	NW.	2.1
9	30.387	30.158	.229	30.298	37.5	10.0	27.5	23.0	23.0	60.0	5.0	. .	C. K.	C. K. Hazy.	1.5	NW.	SE.	1.0
10	30.054	29.755	.299	29.881	41.7	34.5	7.2	37.7	38.2	39.5	32.5	.286	K. N.	K. N.	10.0	South.	South-North.	1.1
11	30.092	29.705	.387	29.876	41.5	26.0	15.5	36.1	34.5	47.0	18.0	. .	C. K. Foggy.	C. K.	4.3	North-NW.	NW.	1.5
12	30.341	30.171	.170	30.229	43.0	26.5	16.5	32.0	30.5	95.5	17.0	. .	C. K. Hazy.	C. K. Hazy.	2.6	NW.	Variable.	1.0
13	30.184	29.577	.607	29.845	45.7	34.5	11.2	35.5	35.5	39.5	22.5	.400	C. K. Snow.	C. K.	5.6	Variable.	South-NW.	1.1
14	29.807	29.635	.172	29.720	45.5	31.2	14.3	34.9	32.4	70.0	18.0	. .	C. K.	C. K.	2.2	NW.	Variable.	1.1
15	29.893	29.706	.187	29.834	36.5	22.5	14.0	28.2	25.7	47.0	18.0	. .	C. K.	C. K.	6.3	NW.	NW.	1.6
16	29.881	29.815	.066	29.854	30.0	17.8	12.2	22.5	23.2	73.0	12.0	. .	C. K. Hazy.	C. K.	2.0	NW.	NW.	1.6
17	29.997	29.879	.118	29.945	35.7	22.0	13.7	26.5	27.2	79.0	17.0	. .	Clear.	C. K.	4.4	NW.	NW.	1.6
18	30.262	29.991	.271	30.135	38.5	20.0	18.5	27.2	26.4	88.0	16.0	. .	C. K.	C. K.	3.2	NW.	NW.	1.2
19	30.381	30.280	.101	30.324	39.3	16.0	23.3	25.3	25.0	80.0	10.5	. .	Clear.	C. K.	0.5	NW.	South-East.	1.1
20	30.323	30.200	.123	30.274	36.5	17.5	19.0	26.6	26.4	37.0	13.0	. .	C. K.	C. K. Snow.	0.6	NW.-East.	NE.	1.0
21	30.163	29.922	.241	30.021	45.5	34.0	11.5	38.8	38.8	48.5	26.0	1.700	K. N.	N.-Mist.	10.0	NE.	NNE.	1.1
22	29.982	29.952	.030	29.876	41.0	36.0	5.0	37.9	37.9	40.0	34.5	.494	C. K. N.	K. N.-Mist.	10.0	NW.	NNE.	1.0
23	29.840	29.671	.169	29.753	47.0	30.0	17.0	36.7	36.7	62.0	25.0	. .	C. K. Foggy.	C. K.	5.1	South.	NW.	1.0
24	30.089	29.841	.248	29.948	45.5	32.0	13.5	37.7	35.4	74.5	24.5	. .	C. K.	C. K. S.	7.3	NW.	NW.	1.3
25	30.303	30.121	.182	30.229	46.5	29.0	17.5	36.2	34.6	86.0	25.0	. .	C. K.	C. K.	6.4	NW.	NW.	1.0
26	30.220	30.046	.174	30.136	46.7	29.0	17.7	35.1	34.8	65.5	23.0	. .	C. K. S.	C. K.	7.0	Variable.	NW.	1.0
27	30.265	30.143	.122	30.190	43.0	27.0	16.0	33.6	32.9	57.5	17.0	. .	C. K.	C. K.	6.4	NW.	NW.	1.1
28	30.226	30.174	.052	30.191	43.5	25.8	17.7	34.8	33.5	85.0	22.5	. .	C. K.	C. K.	5.6	Variable.	NW.	1.0
29	30.326	30.218	.108	30.267	40.0	23.2	16.8	29.2	28.7	80.0	19.0	. .	C. K.	C. K.	5.7	NW.	NW.	1.0
30	30.214	30.063	.151	30.125	35.5	24.0	11.5	30.7	30.3	40.5	20.0	. .	C. K. Snow.	C. K. S.	7.4	NNE.	NW.	1.2
31	30.212	30.134	.078	30.161	45.0	22.5	22.5	29.9	29.5	82.0	16.5	. .	Clear.	C. K.	0.2	NW.	SW.	1.0
Means.	30.169	29.962	.207	30.061	41.7	24.8	16.9	31.9	31.2	63.4	19.6	Sum. 2.880	. . . .	. . . .	5.1	. . . .	. . . .	1.3
Column Nos.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

	In.
Highest Pressure . .	30.482
Lowest Pressure . .	29.577
Extreme Range . . .	.905

	°
Maximum Temperature	51.5
Minimum Temperature	8.0
Extreme Range	43.5

Rain fell on 4 days.
Amounting to 2.880 inches.
Greatest mean force of wind, 2.6.

WEATHER.—GENERAL REMARKS.

Dec. 1. Generally cloudy.
2. Cloudy first part; clear latter part.
3. Clear and pleasant.
4. Clear first part; cloudy latter part.
5. Overcast and cloudy.
6. Clear and pleasant.
7. Cloudy first part; clear and cold latter part.
8. Clear and very cold.
9. Clear and cold.
10. Overcast and rainy.
11. Foggy first part; clear latter part.
12. Clear but hazy weather.
13. Cloudy with snow first part; clear latter part.
14. Clear and pleasant.
15. Clear first part; cloudy latter part.
16. Clear and cold.

WEATHER.—GENERAL REMARKS.

Dec. 17. Clear first part; cloudy latter part.
18. Clear and pleasant.
19. Clear and cold.
20. Clear first part; cloudy with snow latter part.
21. Overcast, with heavy rain.
22. Overcast and rainy.
23. Foggy first part; cloudy latter part.
24. Generally cloudy.
25. Generally cloudy.
26. Cloudy first part; clearing latter part.
27. Clear first part; cloudy latter part.
28. Cloudy first part; cloudy latter part.
29. Clear first part; cloudy latter part.
30. Light snow at 3 a. m. Cloudy.
31. Clear and pleasant.

TABLE II.

Month.	Corrected readings of barometer.					Temperature of the air.				
	Highest daily mean.	Lowest daily mean.	Range of daily means for the month.	Mean daily range.	Monthly mean.	Highest daily mean.	Lowest daily mean.	Range of daily means for the month.	Mean daily range.	Monthly mean.
1882.	in.	in.	in.	in.	in.	°	°	°	°	°
January	30.685	29.626	1.059	.313	30.097	49.0	14.0	35.0	14.6	31.9
February	30.569	29.538	1.031	.301	30.072	53.0	25 5	27.5	18.0	38.9
March	30.566	29.673	.893	.261	30.033	56.2	30.2	26.0	17.1	43.4
April	30.293	29.420	.873	.207	29.969	66.5	33.4	33.1	21.1	50.2
May	30.243	29.522	.721	.183	29.931	70.6	46.4	24.2	18.8	57.8
June	30.134	29.570	.564	.143	29.839	84.0	60.8	23.2	21.7	72.1
July	30.171	29.634	.537	.114	29.944	81.4	64.3	17.1	20.7	74.7
August	30.190	29.646	.544	.111	29.946	79.9	66.3	13.6	18.1	73.2
September	30.165	29.557	.608	.114	29.962	78.0	55.6	22.4	18.2	68.4
October	30.216	29.765	.451	.115	30.007	68.4	50.4	18.0	18.7	59.9
November	30.395	29.782	.613	.170	30.079	67.0	27.4	39.6	17.4	41.9
December	30.412	29.720	.692	.207	30.061	44.3	14.4	29.9	16.9	31.9
	Highest.	Lowest.	Range of daily means in the year.			Highest.	Lowest.	Range of daily means in the year.		
	in.	in.	in.	°	in.	°	°	°	°	°
Means	30.685	29.420	1.265	.187	29.995	84.0	14.0	70.0	18.4	53.4
Number of columns	1	2	3	4	5	6	7	8	9	10

TABLE II—Continued.

Month.	Mean temperature of evaporation.	Mean amount of clouds (0—10.).	Number of clear days.	Rain.		Wind.									
				Number of rainy days.	Amount of rain.	Number of times wind blew from—								Mean force.	Number of calms.
						N.	NE.	E.	SE.	S.	SW.	W.	NW.		
1882.					in.										
January	31.4	6.6	0	16	10.895	26	17	16	14	26	12	10	93	1.4	
February	37.3	5.4	1	10	4.585	8	18	27	23	40	16	4	64	1.4	
March	41.0	6.1	2	12	3.221	14	11	19	30	38	9	8	84	1.6	
April	47.0	6.1	1	6	3.626	9	15	14	24	43	17	14	85	1.3	
May	55.2	6.6	0	16	5.666	14	26	19	24	46	9	11	56	1.3	
June	67.4	5.3	0	7	1.754	10	10	1	19	60	24	26	56	1.4	
July	70.0	5.3	1	12	4.218	14	11	3	28	49	26	21	70	1.2	
August	69.9	6.0	0	13	5.398	28	26	30	32	20	20	9	45	1.2	
September	65.7	5.1	4	8	8.730	16	19	15	20	28	13	11	85	1.2	
October	58.1	5.6	1	5	.280	30	29	9	17	40	11	9	81	1.2	
November	40.3	5.3	0	6	1.754	25	28	4	17	21	9	14	90	1.3	
December	31.2	5.1	2	4	2.880	11	7	7	12	31	14	12	15	1.3	
Total	....	....	12	115	53.007	205	217	164	260	442	180	149	824	...	
Means	51.2	5.7	....	....	4.417	...	...	...	...	...	...	...	...	1.3	
Number of columns	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

The number of clear days in column 13 are days in which amount of cloudiness averaged 0.5 or less.
The number of rainy days in column 14 are days in which any measurable amount of rain fell.

Table III.

Maximum and Minimum Corrected Readings of Barometer at the Hours of Observation for each Month in 1882.

Month.	Maximum.		Minimum.		Range.
	Day and hour.	Reading.	Day and hour.	Reading.	
		in.		in.	in.
January	24—noon.	30.777	31—3 p. m.	29.313	1.464
February	18—noon.	30.640	21—3 p. m.	29.262	1.378
March	8—9 a. m.	30.626	27—6 p. m.	29.463	1.163
April	1—mid.	30.395	19—9 p. m.	29.348	1.047
May	7—3 p. m.	30.342	14—3 p. m.	29.453	.889
June	13—9 a. m.	30.178	1—6 a. m.	29.471	.707
July	16—9 a. m.	30.220	1—3 p. m.	29.568	.652
August	20—9 a. m.	30.238	8—6 p. m.	29.554	.684
September	30—9 a. m.	30.198	11—3 p. m.	29.490	.708
October	6—9 a. m.	30.257	24—6 a. m.	29.697	.560
November	3—9 a. m.	30.482	13—noon.	29.656	.826
December	8—9 a. m.	30.482	13—3 p. m.	29.577	.905

	in.
Maximum for the year	30.777
Minimum for the year	29.262
Range for the year	1.515
Mean monthly range	.915

TABLE IV.

Month.	Maximum.		Minimum.		Range.	Mean of all the maximum and minimum readings.
	Day.	Temperature.	Day.	Temperature.		
		°		°	°	°
January	9	57.5	28	9.0	48.5	32.9
February	15	62.3	2	18.5	43.8	39.9
March	2	72.0	25	23.6	48.4	44.5
April	2	84.0	12	27.0	57.0	51.1
May	9	85.1	3	36.0	49.1	58.1
June	25	94.5	6	50.0	44.5	73.1
July	26	95.3	3 and 6	58.0	37.3	76.4
August	14	90.5	30	55.2	35.3	74.6
September	2	90.5	29	45.5	35.0	69.4
October	9	81.5	25	42.0	39.5	61.7
November	1	80.5	28 and 30	24.0	56.5	43.2
December	2	51.5	8	8.0	43.5	33.3

	°
Maximum temperature for the year	95.3 on July 26.
Minimum temperature for the year	8.0 on Dec. 2.
Range of temperature for the year	87.3
Mean temperature for the year	54.8

APPENDIX I, 1882.

THE ORBIT OF IAPETUS

THE

OUTER SATELLITE OF SATURN.

BY

ASAPH HALL,

PROFESSOR OF MATHEMATICS, UNITED STATES NAVY.

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THE ORBIT OF IAPETUS.

§ 1. This satellite of Saturn was discovered by Jean Dominique Cassini, at Paris, October 25, 1671. The discovery was made with a small glass of 17 feet focal length. Cassini soon discovered the variation in the brightness of this satellite when it is near its conjunctions, and his explanation of this variation has been generally adopted. It is assumed that opposite sides of the satellite have different reflecting powers, and that Iapetus, as is the case with our moon, turns once on its axis during a revolution round its primary. The satellite disappeared entirely in Cassini's telescopes when it was on the following side of the planet. He says: "Elle commence donc à paroître deux ou trois jours avant sa conjonction dans la partie inférieure, & à disparoître deux ou trois jours après sa conjonction dans la partie supérieure. Et quelquefois après avoir commencé à disparoître à la Lunette de 32 pieds, on l'a cherchée inutilement le jour d'après avec une de 45." By continuing his observations until 1673 Cassini found that the period of this satellite is about 80 days. The refracting telescopes of those times were made of small lenses, and to avoid the correction for color the focal lengths were very long. Cassini appears to have had no tube to his telescope, and to have carried the ocular in his hand. It would be extremely difficult to make good observations of position with such instruments, even after devices were contrived for supporting the objective and the ocular, and for bringing them into line, as was done by the younger Cassini and others about 1714. Hence the early observations of this satellite consist of drawings of the planet and its ring, with the relative position of the satellite indicated by a cross or mark, for the corresponding day; the hour and minute being generally omitted. Observations of this kind are given by Jacques Cassini in the Memoirs of the Royal Academy of Sciences, Paris, 1714, p. 361. These drawings will furnish the approximate times of the superior and inferior conjunctions of Iapetus for March and May, 1685, and the time of conjunction for May, 1714. Although the time of conjunction can be found from these drawings only with a rough approximation, the long time that has elapsed renders these observations of some value in determining the periodic time of this satellite. The Paris Memoirs for 1716 contain a memoir by Jacques Cassini on the movement of the satellites of Saturn, and tables are given for the motions of the five satellites then known.

Very few observations of these satellites were made from 1714 until 1787, when attention was directed to them again by Lalande, in a memoir on the motion of Iapetus, Paris Memoirs 1786, p. 372. At the request of Lalande observations of Iapetus were made at Marseilles by Bernard during the opposition of 1787, and in England by Sir William Herschel in the opposition of 1789. Bernard obtained what

is apparently a fine series of observations, extending from July 19, 1787, until October 25, 1787. There are 38 of these observations which are published by Lalande, Paris Memoirs, 1786, pp. 377–378; and they have been used by him to determine a new orbit of the satellite. Bernard was a correspondent of the Academy, and he is referred to by Lalande as an observer of zeal and intelligence. But probably he failed to communicate a correct account of his observations, and M. Stephan, the present director of the observatory at Marseilles, informs me that all the records of that observatory before 1792 have been lost. The orbit of Iapetus, computed by Lalande from Bernard's observations, is six degrees wrong in inclination, but it kept its place as the standard orbit for many years. Several years ago I undertook to compute an orbit from these observations, since a good determination of the elements at such a distant epoch would be interesting on account of the secular variations of the node, and also for determining the periodic time. But after spending much time and labor I was obliged to abandon the work, since I was not able to understand Bernard's method of observing. It is possible that a description of these observations may be found among the records of the Paris Academy, or among the papers of Lalande; but in their present form they can be used only to assist in determining the periodic time of the satellite.

Sir William Herschel's observations of Iapetus are published in the Philosophical Transactions of the Royal Society of London, 1790, pp. 432–438. This series extends from July 18, 1789, to December 16, 1789, and includes observations on 40 days. But this long series, made evidently with much care and labor, is of no use except on two or three days, when the positions observed may be used to determine the periodic time. This is the more disappointing, since Herschel himself in his introduction points out the right way to do the work. He says, p. 430: "Moreover, I am inclined to believe that the surest way of observing the 5th is to trust only to measures taken with micrometers which give the distance and angle of position, except in such cases when the eye is nearly in the plane of this satellite's orbit, where the different reductions may be neglected without bringing on any considerable inaccuracies." The following is a specimen of these observations, the hours and minutes of the times being sidereal:

Sept. 23, $22^h\ 51^m$.	At a considerable distance *np*, ♄	(V).
Sept. 24, $19^h\ 56^m$.	At a good distance *np*, ♄	(W).
Sept. 25, $19^h\ 34^m$.	The 5th pursues its track.	(X).

(V)	$10^h\ 29'\ 52''$.	193°.3	(mean time).
(W)	$7^h\ 31'\ 25''$.	197°.4	" "
(X)	$7^h\ 5'\ 33''$.	201°.9	" "

It might be thought at first sight that these angles were observed; but they were computed by Herschel from his own tables. It should be said, however, that this vague method of observing was common in Europe until the beginning of the present century, and that hence Herschel may be excused for not following what he himself saw was the correct method. The method of accurate observation was established in

England by Bradley many years before Herschel's time, but the value of Bradley's labors was ignored by his own countrymen for a long time, and until Bessel's discussion of his observations in the Fundamenta Astronomiæ brought out their great value.

After the observations of Iapetus by Bernard and Herschel in 1787 and 1789, and the publication of tables of the motions of this satellite by Lalande a few years later, very few observations of it were made during the next forty years. The volumes of the Königsberg observations for 1832, 1833, 1834, and 1837 contain some observations of Iapetus by Bessel with the heliometer. As this satellite was too faint to compare directly with the planet, these measurements are referred to Titan. There appears to be sufficient data here for a good determination of the orbit of Iapetus at that epoch; but it would need a more complete examination than I have made to decide this question, and so far as I know these observations have never been reduced and discussed.

During his residence at the Cape of Good Hope Sir John Herschel observed the angles of position of Iapetus. These observations extend from May 18, 1835, to June 28, 1837, and furnish data for determining the periodic time of the satellite.

A series of observations of Iapetus was made by Mr. Lassell in 1850, from September 11 to December 24. These observations are published in the Astronomische Nachrichten, Band XXXII, p. 241. They are differences of right ascension and north polar distance of the planet and satellite, and observations were made on 18 days. This series seems to be sufficient to give a good determination of the position of the satellite at that epoch, but it appears that no discussion of these observations has been made.

The Memoirs of the Royal Astronomical Society of London, Vol. XXVIII, contains an extended series of observations of Iapetus made at Madras by Capt. W. S. Jacob, the director of the Madras observatory. These observations extend from November 27, 1856, to April 10, 1858, and are measurements of the angles of position and the distances.

The preceding is an account of the principal observations of Iapetus that were made before 1874, when observations of the satellites of Saturn were begun at Washington with the 26-inch refractor.

§ 2. Soon after his discovery of Iapetus the elder Cassini noticed that the orbit plane of this satellite did not coincide with that of Titan, the bright satellite discovered by Huygens sixteen years before, and whose orbit is nearly in the equator of the planet. But Cassini's observations did not permit an accurate determination of the difference of inclination of these orbits. The son, Jacques Cassini, found the periodic time of Iapetus to be 79 days, 7 hours, and 47 minutes; and in the Paris Memoirs for 1716, pp. 200–229, he has given some tables of the motion of this satellite. He says that the orbit of this satellite is inclined 15 or 16 degrees to the plane of the ecliptic, and by nearly the same amount to the plane of the ring; a statement which is nearly correct, but Cassini does not attempt an accurate determination of this element, of which he makes no use.

After Lalande had obtained the observations made at Marseilles by Bernard in 1787, he undertook a new computation of the orbit of this satellite. Lalande's work

is published among the memoirs of the Paris Academy for 1786, p. 372. He finds from the two observations of August 4 and September 8, 1787, when the satellite was near its elongations, the inclinations 24° 48′ and 24° 45′. These are in good agreement; but they are both erroneous by nearly six degrees, and are much farther from the truth than the rough estimate of Jacques Cassini. Still, as this determination was founded on what appeared to be an excellent series of observations, and was made by an astronomer of reputation, the orbit computed by Lalande was for a long time generally adopted. Lalande published tables of the motions of the satellites of Saturn in the Connaissance des Tems for 1791 and 1792. In the third volume of his Astronomie, p. 209, Lalande speaks in a general manner of the motion of the node of the orbit of Iapetus, and gives the values of this motion which he had found both from observation and from theory.

In his Mécanique Celeste, Tome IV, p. 173, Laplace has given an elegant investigation of the secular perturbations of Iapetus produced by the action of the sun. The curious and interesting results obtained by Laplace were criticised by Plana in the Memoirs of the Royal Astronomical Society, Vol. II, p. 325. In the Connaissance des Tems for 1829, p. 245, Laplace replies to Plana's criticisms, and by a different method finds his former results. Poisson also, in the Connaissance des Tems for 1831, made reply to the objections brought forward by Plana, and these criticisms may be considered as completely refuted. At the end of his remarks on this part of the Mécanique Celeste Plana calls attention to a relation between the motions of Titan and Iapetus that will produce a phenomenon similar to that existing in the motions of Jupiter and Saturn, viz, that five periods of Titan are nearly equal to one of Iapetus. The coefficient of this inequality has recently been computed by Mr. Abel Souchon in the Astronomische Nachrichten, Band XCV, p. 97.

It will be seen, therefore, that the orbit of this satellite presents some peculiarities that make the study of its motion interesting. Although Saturn is at a great distance from the sun, still the distance of Iapetus from the planet is so great that the action of the sun draws this satellite out of the plane of the planet's equator down towards the ecliptic, and produces a large motion of the node. This gives rise to some elegant geometrical relations which were indicated by Laplace, but on account of the erroneous elements he employed his numerical results are not correct.

From his observations, made at Madras, Captain Jacob computed two orbits of Iapetus, one from 57 observations made in 1856 and 1857, and another from 45 observations made in 1857 and 1858. His results are as follows:

	1856–'57.	1857–'58.
	° ′	° ′
Mean longitude	= 294 31.1	= 294 26.1
Inclination	= 18 37.9	= 18 49.4
Node	= 143 1.3	= 142 46.2
Perisaturnium	= 349 20	= 353 30
Eccentricity	= 0.028443	= 0.027960
Mean distance	= 514″.96	= 514″.34
Daily motion	= 4°.538042	= 4°.538031

The epoch of the longitudes is 1858, Jan. 0.0 Greenwich mean time. These elements agree very well, but Captain Jacob considers the first set as the most trustworthy.

The first volume of the Annals of the Observatory of Toulouse contains an interesting memoir by F. Tisserand: "*Sur les Déplacements séculaires du Plan de l'Orbite du huitième Satellite de Saturne* (*Japhet*)." The author finds a simple relation between the angles made at any epoch by the orbit of this satellite with the orbit of Saturn and the plane of the ring. He shows that the pole of the orbit describes a spherical ellipse. At the end of his memoir Mr. Tisserand has deduced some new elements of the orbit of Iapetus, correcting the elements of Captain Jacob by means of ten observations made at Washington by Professor Newcomb in 1874. The new elements are as follows:

	° ′	
Mean longitude	= 333 16.7	Mean equinox, 1874.0
Inclination	= 18 31.5	
Node	= 142 40.1	
Perisaturnium	= 348 0	
Eccentricity	= 0.02957	
Mean distance	= 514″.37	
Daily motion	= 4°.538042	

The epoch of the longitude is 1874, September 30, Greenwich mean noon.

§ 3. On beginning observations with the 26-inch refractor in 1875, the satellites of Saturn were some of the objects which I first observed. At that time the apparent orbit of Iapetus was very eccentric, and the difference of declination between the planet and satellite was extremely small. As there appeared to be at that time some doubt about the value of a revolution of the screw of the micrometer, and since, in the case of Iapetus, any error in this value would be multiplied by a large factor, I observed differences of right ascension and declination of the planet and satellite during the years 1875, 1876, and 1877. The mean distance of the satellite found from these observations will depend chiefly on the differences of right ascension, and as this distance is the principal factor in determining the mass of the planet, the mass itself will be nearly free from an error of the screw. The observations were made with an achromatic eye-piece giving a magnifying power of 383. The wires were illuminated by means of a red light, and the differences of right ascension were observed on a chronograph. From a large number of transits I find that the probable error of a single difference of right ascension found from the transit of the satellite and planet over two wires is ±0.044. The limbs of Saturn were observed, and the mean was assumed as corresponding to the center of the planet. The differences of declination were observed by bisecting the satellite and the ball of the planet.

After the apparent orbit of Iapetus had become more opened, observations were made of the angle of position and distance of the satellite. In these observations it was necessary, when the satellite was not near conjunction, to slide the eye-piece in order to bring the objects successively into the field of view. Such observations

require a good performance of the driving-clock and much patience on the part of the observer. The ball of the planet was bisected with one wire, the satellite with the other, and the eye-piece was moved from one object to the other until the bisections remained satisfactory. Such a method of observing is evidently subject to large accidental errors. Moreover, the diameter of the planet being 20″ at opposition, there is some uncertainty in bisecting the disk, and the appearance of the ring may cause a difference in the bisections at different angles of position; but after trying some other ways with the filar micrometer I concluded to make the bisections in the manner described. The satellite could be observed with ease when it was on the following side of the planet, and its change of brightness appeared to produce no difficulty in the observations.

The following tables give my observations of Iapetus. The quantities will be understood by the headings of the columns, and it will be seen that for the differences of right ascension and declination the differential refraction is nearly zero. In order to make the discussion complete I have included the observations of Professor Newcomb made in 1874.

Observations of Iapetus.

DIFFERENCE OF RIGHT ASCENSION AND DECLINATION.

Date.	Wash. M. T.	$\Delta\alpha$	Ref.	No.	Wash. M. T.	$\Delta\delta$	Ref.	No.	Wt.	Remarks.
1875.	h. m.	s.	s.		h. m.	″	″			
June 10	15 0.6	+35.066	0.000	20	15 21.9	+11.75	+0.01	5	3	
12	15 2.7	+35.714	0.000	24	14 45.1	+11.73	+0.01	5	2	Windy.
13	14 41.6	+35.722	0.000	10	. . .	. .	. .	.	2	Stopped by clouds.
14	14 0.4	+35.402	0.000	26	14 18.7	+11.72	+0.01	5	3	
16	13 46.1	+34.213	0.000	26	14 5.8	+11.18	+0.01	5	3	
20	13 27.9	+29.353	0.000	28	13 44.2	+ 8.92	+0.01	5	2	Strong moonlight and haze.
24	13 48.5	+21.328	0.000	26	14 8.6	+ 5.59	+0.01	5	3	
26	13 51.8	+16.469	0.000	30	14 13.2	+ 3.24	0.00	5	3	
July 12	13 45.1	—26.680	0.000	22	14 5.7	—10.59	—0.01	5	3	
14	13 54.9	—30.627	0.000	28	14 20.6	—11.30	—0.01	5	3	
16	12 28.4	—33.778	0.000	26	12 56.6	—11.76	—0.01	5	2	
24	12 5.1	—37.990	0.000	28	12 56.3	— 7.57	—0.01	5	2	
26	12 17.0	—36.762	0.000	28	12 38.3	— 6.10	—0.01	5	3	
27	12 21.0	—35.760	0.000	28	12 38.7	— 4.51	0.00	5	2	
29	11 43.4	—33.137	0.000	28	11 39.7	— 3.44	0.00	5	2	
Aug. 25	9 48.2	+35.000	0.000	26	10 6.4	+ 8.69	+0.01	5	2	
26	9 55.7	+36.167	0.000	22	10 34.4	+ 7.32	+0.01	5	3	
29	9 54.6	+37.840	0.000	36	10 21.4	+ 3.92	0.00	5	3	
30	10 22.6	+37.965	0.000	26	10 49.4	+ 2.46	0.00	5	2	
31	9 20.3	+37.689	0.000	24	9 38.4	+ 0.87	0.00	5	3	
Sept. 1	11 8.6	+37.242	0.000	22	11 26.3	— 0.66	0.00	5	4	
2	9 29.8	+36.525	0.000	34	9 54.3	— 2.26	0.00	5	3	
3	8 58.8	+35.672	0.000	20	9 26.3	— 3.85	0.00	5	4	

Observations of Iapetus—Continued.

Date.	Wash. M. T.	Δα	Ref.	No.	Wash. M. T.	Δδ	Ref.	No.	Wt.	Remarks.
1875.	h. m.	s.	s.		h. m.	″	″			
Sept. 4	9 28.8	+34.465	0.000	24	9 58.3	— 4.85	0.00	5	2	
6	9 24.9	+31.525	0.000	28	9 56.6	— 8.21	—0.01	5	3	
7	9 8.9	+29.735	0.000	24	9 37.6	—10.67	—0.01	5	4	
8	9 24.8	+27.702	0.000	22	9 52.7	—10.66	—0.01	5	3	
9	9 9.7	+25.544	0.000	22	10 48.7	—12.24	—0.01	5	3	
11	9 43.2	+20.750	0.000	26	10 6.7	—14.18	—0.01	5	3	
27	9 9.6	—23.595	0.000	20	9 39.0	—15.16	—0.01	5	3	
29	9 11.0	—27.793	0.000	28	9 32.8	—13.37	—0.01	5	3	
30	8 26.8	—29.626	0.000	20	8 50.8	—12.43	—0.01	5	4	
Oct. 2	7 40.3	—32.770	0.000	20	8 0.0	— 9.30	—0.01	5	3	
5	7 20.4	—36.029	0.000	30	7 52.3	— 4.69	0.00	5	3	
7	8 6.2	—37.136	0.000	36	8 0.4	— 1.29	0.00	5	2	
9	6 51.4	—37.370	0.000	28	7 19.5	+ 1.93	0.00	4	3	
12	7 7.7	—35.992	0.000	20	7 25.6	+ 6.85	+0.01	5	2	
13	8 1.2	—35.010	0.000	22	8 21.7	+ 8.47	+0.01	5	2	
17	6 40.8	—29.443	0.000	18	6 56.0	+13.77	+0.01	5	3	Through clouds.
19	7 4.5	—25.374	0.000	18	7 30.3	+16.18	+0.01	3	2	
21	7 6.9	—20.851	0.000	30	7 29.0	+18.05	+0.02	5	2	
22	6 40.0	—18.428	0.000	24	7 12.5	+18.74	+0.02	5	4	
22	6 57.4	—18.379	0.000	24	. . .	. .	. .	.	4	
Nov. 5	6 40.1	+19.781	0.000	28	7 0.5	+15.23	+0.01	5	3	
6	6 59.3	+22.102	0.000	28	7 20.5	+13.75	+0.01	5	3	
11	6 37.8	+30.671	0.000	26	7 3.7	+ 7.31	+0.01	5	3	
12	6 7.3	+31.744	0.000	28	6 31.7	+ 5.67	0.00	5	4	
13	6 0.7	+32.699	0.000	28	6 27.8	+ 4.42	0.00	5	3	
16	6 12.5	+34.130	0.000	18	. . .	. .	. .	.	1	Very windy. Clouds.
17	5 50.3	+34.196	0.000	20	6 38.0	— 0.81	0.00	5	3	Satellite faint. Clouds.
22	5 40.4	+31.189	0.000	12	. . .	. .	. .	.	3	Faint. Power 600 A.
22	5 59.8	+31.120	0.000	12	6 19.2	— 7.42	—0.01	5	3	Power 400.
24	6 2.1	+28.587	0.000	32	6 30.3	— 9.30	—0.01	5	3	
25	5 57.5	+27.046	0.000	32	6 19.3	—10.68	—0.01	5	3	
27	6 0.2	+23.524	0.000	28	6 25.4	—11.97	—0.01	5	3	
29	6 30.8	+19.367	0.000	26	6 55.5	—13.22	—0.01	5	2	
30	6 48.5	+17.135	0.000	13	. . .	. .	. .	.	2	
1876.										
June 5	15 46.0	—34.674	—0.001	20	16 3.6	—32.65	—0.02	5	2	
6	15 29.5	—34.896	—0.001	26	15 54.3	—35.23	—0.03	5	3	
7	15 45.3	—34.915	—0.001	22	16 3.1	—37.59	—0.03	5	4	
8	15 32.5	—34.758	—0.001	24	15 56.5	—39.94	—0.03	5	3	Windy.
9	15 35.3	—34.246	—0.001	26	15 59.2	—41.69	—0.03	5	3	
10	15 43.3	—33.589	—0.001	24	16 5.5	—43.27	—0.03	5	3	
July 15	14 45.4	+36.680	0.000	24	15 14.9	+38.30	+0.02	5	2	
16	15 3.0	+36.664	0.000	26	15 25.9	+39.89	+0.02	5	4	
18	14 43.0	+35.886	0.000	18	15 2.0	+43.51	+0.03	5	3	

Observations of Iapetus—Continued.

Date.	Wash. M. T.	$\Delta\alpha$	Ref.	No.	Wash. M. T.	$\Delta\delta$	Ref.	No.	Wt.	Remarks.
1876.	h. m.	s.	s.		h. m.	″	″			
July 21	14 20.6	+33.077	0.000	24	14 53.2	+46.08	+0.03	5	2	
24	14 21.9	+28.241	0.000	24	14 42.9	+46.63	+0.03	5	2	
26	14 30.2	+24.169	0.000	18	14 52.0	+45.77	+0.03	3	2	
27	14 42.3	+21.790	0.000	22	15 1.5	+43.68	+0.03	3	3	
Aug. 21	12 14.0	−37.288	0.000	20	12 43.5	−27.43	−0.02	3	2	
22	11 19.8	−37.900	0.000	26	11 39.5	−29.46	−0.02	4	2	
24	12 42.5	−38.437	0.000	28	13 22.1	−32.78	−0.02	5	4	
25	11 35.5	−38.302	0.000	5	. . .	. .	. .	.	1	Clouds.
26	10 58.8	−38.015	0.000	22	11 20.7	−35.52	−0.03	5	1	
27	11 4.0	−37.415	0.000	20	11 25.2	−36.49	−0.03	5	2	
28	11 9.2	−36.606	0.000	30	11 32.8	−36.60	−0.03	5	3	
29	10 57.1	−35.571	0.000	20	11 48.3	−37.10	−0.03	3	3	
31	10 45.7	−32.808	0.000	18	11 1.4	−37.22	−0.03	4	4	
Sept. 20	9 0.0	+21.517	0.000	18	9 23.9	+ 4.91	0.00	3	2	Foggy and very faint at declination.
Oct. 2	9 11.6	+37.230	0.000	18	9 34.7	+27.23	+0.02	4	3	Moonlight and satellite faint.
9	8 4.6	+30.765	0.000	20	8 30.6	+28.34	+0.02	4	2	Haze and satellite faint at times.
11	8 40.4	+27.073	0.000	24	9 0.2	+27.54	+0.02	4	3	
16	8 42.5	+15.246	0.000	20	9 9.5	+20.54	+0.01	4	4	
18	9 6.9	+ 9.732	0.000	20	9 21.0	+17.22	+0.01	4	4	
24	8 5.9	− 7.095	0.000	18	. . .	. .	. .	.	2	Clouds.
31	8 13.3	−24.298	0.000	20	8 32.3	− 8.23	−0.01	4	4	
Nov. 1	6 59.0	−26.173	0.000	20	7 30.8	−10.18	−0.01	4	3	
7	7 18.4	−34.293	0.000	18	7 38.0	−19.89	−0.01	4	2	
8	7 20.3	−34.959	0.000	14	7 37.0	−20.42	−0.01	3	2	
12	5 25.8	−35.515	0.000	20	5 45.6	−24.07	−0.02	4	4	
22	6 47.5	−22.527	0.000	20	7 14.8	−23.35	−0.02	4	3	
24	7 44.9	−17.863	+0.001	22	8 0.9	−21.10	−0.02	3	2	
Dec. 7	5 54.9	+16.090	0.000	20	6 13.5	+ 0.81	0.00	4	2	
12	5 51.8	+26.125	0.000	20	6 11.2	+11.87	+0.01	4	2	
15	6 22.2	+30.174	0.000	20	6 39.4	+17.20	+0.01	4	2	
19	5 44.3	+32.686	−0.001	22	6 17.4	+23.88	+0.02	4	3	
1877.										
Aug. 11	13 23.8	+31.332	0.000	22	13 40.5	+21.68	+0.01	5	3	
15	13 19.1	+36.300	0.000	20	13 48.5	+47.38	+0.03	5	2	
16	12 13.9	+36.952	0.000	20	12 43.0	+52.71	+0.03	5	2	
17	12 14.9	+37.387	0.000	20	12 43.6	+58.29	+0.03	5	2	
18	13 14.1	+37.592	0.000	20	13 30.0	+63.48	+0.04	5	3	
27	12 33.9	+28.718	0.000	24	12 50.8	+35.17	+0.02	5	3	
Sept. 22	11 0.1	−35.102	0.000	20	. . .	. .	. .	.	2	
23	10 7.6	−36.096	0.000	18	10 27.7	−36.82	−0.02	5	3	
25	10 34.7	−37.522	0.000	20	10 52.8	−46.61	−0.03	4	3	
26	10 24.4	−37.855	0.000	20	10 41.9	−50.95	−0.03	5	2	
29	8 53.2	−37.406	−0.001	20	9 21.0	−61.41	−0.04	5	2	

Observations of Iapetus—Continued.

Date.	Wash. M. T.	$\Delta\alpha$	Ref.	No.	Wash. M. T.	$\Delta\delta$	Ref.	No.	Wt.	Remarks.
1877.	h. m.	s.	s.		h. m.	″	″			
Oct. 1	9 24.5	−35.969	0.000	19	9 44.7	−66.45	−0.04	5	3	
6	8 47.8	−28.395	−0.001	20	9 4.7	−70.84	−0.04	5	2	
9	8 14.2	−21.524	−0.001	18	8 29.9	−68.02	−0.04	3	2	
31	6 34.2	+33.693	+0.001	22	6 52.7	+33.04	+0.02	5	2	
Nov. 6	6 59.2	+35.890	0.000	20	7 18.5	+46.04	+0.03	5	2	
7	6 26.6	+35.412	+0.001	20	7 46.1	+58.40	+0.04	5	2	
12	7 0.6	+29.978	0.000	22	7 22.3	+65.89	+0.04	5	2	
13	6 23.1	+28.385	0.000	20	6 41.9	+66.15	+0.04	5	2	
16	6 31.8	+22.461	0.000	24	7 0.5	+65.28	+0.04	3	2	
17	6 22.3	+20.193	0.000	20	6 48.5	+63.94	+0.04	5	3	
19	6 58.2	+15.354	0.000	20	7 23.7	+60.95	+0.04	5	2	
20	6 22.4	+12.881	0.000	18	6 47.2	+57.80	+0.04	5	2	
Dec. 7	7 18.6	−27.743	0.000	20	7 38.1	−13.05	−0.01	5	3	
9	6 39.8	−30.415	0.000	20	6 57.1	−21.88	−0.01	5	3	
10	5 53.5	−31.428	0.000	20	6 17.6	−26.29	−0.02	5	2	
12	6 12.2	−33.066	0.000	20	6 29.7	−35.01	−0.02	5	3	
13	6 1.3	−33.520	0.000	22	6 21.8	−38.99	−0.02	5	2	
14	6 18.8	−33.842	0.000	20	6 35.8	−42.97	−0.03	5	3	
15	6 12.9	−33.953	0.000	22	6 29.4	−45.89	−0.03	5	3	
19	6 19.5	−32.274	0.000	20	6 36.1	−57.34	−0.03	5	3	
20	6 20.8	−27.738	0.000	20	6 47.7	−50.42	−0.03	4	2	Not the satellite.

ANGLE OF POSITION AND DISTANCE.

Date.	Wash. M. T.	p	Ref.	No.	Wash. M. T.	s	Ref.	No.	Wt.	Remarks.
1875.	h. m.	°	°		h. m.	″	″			
June 30	14 15.7	90.73	−0.01	4	14 44.2	77.71	+0.02	3	2	
Aug. 5	12 15.2	270.91	0.00	4	12 20.4	255.18	+0.07	4	3	
8	12 4.0	273.78	0.00	4	12 12.0	127.69	+0.04	4	3	
Sept. 14	9 1.0	95.41	0.00	4	9 42.0	182.18	+0.05	2	2	
16	8 53.4	100.55	0.00	4	9 7.9	100.58	+0.03	4	3	
19	8 21.5	235.90	+0.02	4	8 33.0	35.54	+0.03	3	4	
20	9 50.3	255.48	+0.01	4	9 57.3	76.71	+0.02	2	2	
Oct. 25	6 27.1	277.61	0.00	4	6 34.1	152.11	+0.04	4	4	
27	6 46.5	286.50	+0.01	4	6 58.5	71.36	+0.02	4	2	
29	6 59.7	37.90	−0.02	4	7 7.2	25.15	+0.02	3	4	
Dec. 2	5 29.7	94.48	+0.01	4	5 39.7	178.84	+0.06	4	4	
1876.										
July 15	15 30.1	86.07	−0.01	4	15 41.1	541.43	+0.17	4	2	
16	15 41.4	86.01	0.00	3	15 50.9	540.40	+0.15	3	3	
18	15 20.5	85.47	0.00	3	15 29.0	529.26	+0.15	3	3	
21	15 7.2	84.61	0.00	4	15 15.2	487.14	+0.14	4	2	
26	15 3.5	82.83	0.00	3	15 10.5	356.03	+0.10	3	3	

Observations of Iapetus—Continued.

ANGLE OF POSITION AND DISTANCE—Continued.

Date.	Wash. M. T.	p	Ref.	No.	Wash M. T.	s	Ref.	No.	Wt.	Remarks.
1876.	h. m.	°	°		h. m.	″	″			
Aug. 5	13 8.5	296.22	+0.01	4	13 20.5	51.65	+0.02	2	3	
14	13 30.6	268.80	0.00	4	13 43.6	398.49	+0.11	4	3	
20	12 2.0	267.45	0.00	4	12 12.5	537.30	+0.16	4	2	
21	13 4.5	267.15	—0.01	4	13 24.0	551.34	+0.16	3	2	
22	12 0.0	267.09	0.00	3	12 22.5	560.46	+0.16	3	3	
26	11 46.2	266.46	0.00	4	12 0.2	561.42	+0.16	4	2	
27	11 48.7	266.25	0.00	4	11 57.2	552.30	+0.16	4	2	
28	11 56.8	266.12	0.00	4	12 8.3	540.59	+0.15	4	3	
31	11 17.4	265.72	0.00	4	12 27.4	482.63	+0.14	4	2	
Sept. 26	8 56.5	87.87	—0.01	4	9 5.5	488.99	+0.16	4	2	
28	9 1.0	87.65	0.00	4	9 25.0	520.98	+0.16	4	2	Driving-clock running badly.
29	9 13.0	87.45	0.00	4	9 22.5	531.75	+0.16	4	2	Clouds and satellite faint.
Oct. 2	8 28.0	87.28	—0.01	4	8 39.7	543.79	+0.18	4	3	
3	8 50.9	87.06	0.00	4	9 0.9	540.76	+0.16	4	2	
9	8 59.6	86.69	0.00	2	9 9.1	448.80	+0.13	2	2	
11	9 11.2	86.24	0.00	4	9 21.7	394.71	+0.11	3	3	
13	8 59.8	85.68	0.00	4	9 3.8	332.02	+0.09	4	4	
16	7 39.0	84.40	—0.01	4	7 45.0	224.27	+0.07	4	2	
18	8 2.5	83.00	—0.01	4	8 7.0	144.35	+0.04	4	4	
21	7 33.8	59.55	—0.01	4	7 39.3	22.99	+0.01	3	3	
24	7 38.3	273.05	0.00	4	7 46.8	104.86	+0.03	4	3	
27	8 38.6	270.05	0.00	4	8 44.1	223.01	+0.07	4	3	
31	7 32.3	268.71	0.00	4	7 41.3	356.87	+0.10	4	4	
Nov. 1	7 59.3	268.40	0.00	4	8 8.3	385.45	+0.11	4	3	
10	6 11.5	267.52	—0.01	4	6 30.0	523.32	+0.16	2	2	
12	5 55.6	267.30	—0.01	4	6 5.6	521.56	+0.16	2	3	
22	6 15.3	266.06	0.00	4	6 23.8	332.59	+0.09	4	3	
24	6 43.9	265.39	0.00	4	6 50.4	265.48	+0.08	4	2	
29	6 0.6	259.00	0.00	4	6 9.1	75.73	+0.02	4	1	
Dec. 1	6 49.3	147.10	+0.01	4	6 56.3	13.78	0.00	3	2	
5	5 29.6	91.03	0.00	4	5 35.1	162.04	+0.05	4	2	
19	6 29.9	87.09	+0.01	4	6 37.4	478.83	+0.18	4	3	
21	5 46.5	86.87	+0.01	4	5 55.5	479.40	+0.19	3	2	
July 24	14 58.9	83.70	0.00	3	15 6.9	416.52	+0.12	3	2	
1877.										
June 22	15 8.8	305.88	0.00	4	15 16.5	90.51	+0.03	2	2	
23	15 13.6	292.91	0.00	4	. . .	. .	. .	.	2	
25	14 54.0	280.89	—0.01	4	15 1.5	193.03	+0.07	4	2	
Oct. 13	9 8.5	249.64	—0.01	4	9 14.0	165.50	+0.06	4	2	
14	8 29.6	244.46	—0.01	4	8 34.6	124.30	+0.06	4	3	
15	7 52.7	233.86	—0.01	4	7.56.2	84.77	+0.05	4	4	

Observations of Iapetus—Continued.

Date.	Wash. M. T.	*p*	Ref.	No.	Wash. M. T.	*s*	Ref.	No.	Wt.	Remarks.
1877.	h. m.	°	°		h. m.	″	″			
Oct. 16	7 58.8	205.41	0.00	4	8 5.3	50.65	+0.03	3	2	
17	7 3.8	152.19	0.00	4	7 11.3	46.91	+0.01	4	2	
18	6 41.9	119.56	0.00	4	6 46.9	75.44	+0.02	4	4	
Nov. 27	6 52.2	290.97	+0.01	4	6 58.2	94.51	+0.06	2	2	
1878.										
Jan. 3	6 18.0	222.83	—0.01	4	6 22.0	64.33	+0.02	2	3	
4	6 26.6	186.17	—0.02	4	6 32.1	43.69	+0.03	2	3	
5	6 8.1	138.97	—0.01	4	6 14.1	52.51	+0.04	2	3	
Sept. 27	9 36.9	77.28	0.00	4	9 44.4	522.52	+0.16	4	2	
28	9 41.7	76.66	0.00	4	9 48.4	501.69	+0.15	4	3	
Oct. 1	9 47.6	73.61	0.00	4	9 54.6	422.17	+0.12	4	3	
Nov. 2	7 55.3	261.14	—0.01	2	8 2.8	543.31	+0.18	3	3	
4	8 6.9	259.81	0.00	4	8 14.4	532.88	+0.17	4	3	
13	8 19.9	249.48	—0.01	4	8 25.4	289.65	+0.10	4	4	
15	7 11.0	243.65	0.00	4	7 16.5	214.63	+0.08	4	3	
18	8 57.6	216.38	—0.01	4	9 3.6	100.14	+0.04	4	3	
Dec. 6	7 24.0	84.01	0.00	4	7 33.0	514.46	+0.16	4	3	
7	6 46.6	83.21	—0.01	4	6 53.1	522.32	+0.17	4	2	
16	6 56.1	77.24	—0.01	4	7 2.1	450.73	+0.15	4	3	
23	6 38.4	67.19	—0.01	4	6 42.9	254.91	+0.10	4	2	
27	6 47.0	45.52	0.00	4	6 52.5	121.74	+0.07	4	2	
30	6 9.2	339.10	+0.01	4	6 15.2	75.94	+0.03	4	2	
1879.										
Oct. 7	11 5.4	148.15	0.00	4	11 9.9	119.35	+0.06	4	4	
Nov. 12	8 59.6	37.08	—0.01	4	9 5.6	159.51	+0.05	4	3	Windy.
13	6 48.6	25.35	—0.01	4	6 54.1	133.44	+0.05	4	3	
14	7 34.1	5.95	—0.01	4	7 39.6	104.07	+0.05	4	3	
15	9 5.4	341.85	—0.01	4	9 9.4	110.62	+0.04	4	3	
16	7 18.3	322.45	0.00	4	7 23.8	122.23	+0.06	4	3	
1880.										
Nov. 7	9 18.6	192.23	—0.01	4	9 24.1	145.61	+0.05	4	2	
8	8 14.1	173.93	—0.01	4	8 19.6	133.77	+0.06	4	3	Faint. Hazy.
9	9 20.1	152.73	0.00	4	9 26.1	137.14	+0.05	4	2	
Dec. 16	7 20.0	24.95	—0.01	4	7 24.0	162.88	+0.06	4	3	
17	7 9.1	10.97	0.00	4	7 13.6	142.36	+0.04	4	2	
18	6 49.1	353.65	0.00	4	6 55.1	131.61	+0.05	4	2	
19	5 32.1	336.23	0.00	4	5 38.1	133.08	+0.06	4	3	
1881.										
Sept. 23	12 5.5	201.65	0.00	4	12 11.0	184.71	+0.08	4	3	
24	11 53.6	188.00	—0.01	4	11 59.6	164.12	+0.06	4	2	
26	11 31.7	153.65	0.00	4	11 39.0	156.96	+0.07	4	2	Cloudy.
1883.										
Oct. 15	13 8.4	63.60	0.00	4	13 14.9	476.36	+0.14	4	3	
16	13 19.0	61.52	0.00	4	13 26.0	449.26	+0.13	4	2	Strong moonlight.

Observations of Iapetus—Continued.

Date.	Wash. M. T.	*p*	Ref.	No.	Wash. M. T.	*s*	Ref.	No.	Wt.	Remarks.
1883.	h. m.	°	°		h. m.	″	″			
Oct. 24	12 13.4	21.48	0.00	4	12 18.4	195.91	+0.06	4	3	
29	12 18.5	308.08	0.00	4	12 24.5	200.65	+0.07	4	2	Very unsteady.
30	11 58.1	298.42	0.00	4	12 9.1	228.87	+0.08	4	2	
31	11 55.6	290.92	0.00	4	12 3.1	261.91	+0.09	4	3	
Nov. 1	11 52.7	285.15	0.00	4	11 58.2	296.17	+0.10	4	2	
3	11 33.2	276.82	—0.01	4	11 37.7	364.90	+0.13	4	3	Hazy.
4	10 50.2	274.22	—0.01	4	10 55.7	398.28	+0.16	4	3	
5	11 29.3	271.32	0.00	4	11 41.8	431.24	+0.14	4	3	
27	9 50.5	230.28	0.00	4	9 56.5	325.07	+0.09	4	3	
29	10 35.1	218.45	0.00	4	10 42.6	253.88	+0.07	4	3	
30	9 50.6	210.35	0.00	4	9 59.6	221.66	+0.06	4	2	
Dec. 1	10 4.6	199.45	0.00	4	10 11.1	193.33	+0.06	4	2	
2	11 5.2	184.97	0.00	4	11 9.2	172.92	+0.05	4	2	
3	10 28.8	168.87	0.00	4	10 34.8	164.07	+0.05	4	4	
5	11 7.8	136.47	0.00	4	11 12.3	187.24	+0.06	4	2	
6	10 16.9	125.35	0.00	4	10 23.4	211.42	+0.06	4	3	
9	9 41.5	103.97	0.00	4	9 48.0	312.42	+0.10	4	2	
10	9 55.1	99.70	0.00	4	10 2.6	348.45	+0.10	4	3	
17	7 29.8	83.93	—0.01	4	7 38.3	551.00	+0.22	4	2	Faint. Cloudy.
17	9 52.3	83.85	0.00	4	9 56.8	552.33	+0.16	4	3	
18	8 12.8	82.37	0.00	4	8 19.3	570.39	+0.19	4	2	
21	8 54.9	78.37	0.00	4	9 2.9	608.23	+0.18	4	2	
27	9 2.8	70.95	0.00	4	9 14.8	590.84	+0.16	4	2	Cloudy.
28	9 14.4	69.65	0.00	4	9 24.4	576.08	+0.16	4	2	
29	8 30.4	68.00	0.00	4	8 37.9	559.05	+0.16	4	2	
1884. Jan. 2	9 27.5	61.22	0.00	4	9 36.0	459.73	+0.13	4	2	
5	7 39.1	53.38	0.00	4	7 46.1	367.89	+0.10	4	3	
6	7 47.0	49.58	0.00	4	8 4.0	332.99	+0.09	4	2	
17	8 1.2	293.31	0.00	4	8 7.7	249.05	+0.07	4	3	
20	7 58.6	278.40	0.00	4	8 6.1	344.80	+0.10	4	3	
21	8 19.2	274.92	0.00	4	8 26.7	376.37	+0.11	4	3	
22	7 23.7	272.28	0.00	4	7 30.2	404.25	+0.11	4	2	
23	6 46.7	269.95	0.00	4	7 0.7	431.50	+0.13	4	2	
25	8 23.8	265.88	0.00	4	8 31.8	481.13	+0.14	4	3	Hazy.
26	7 22.3	264.18	0.00	4	7 30.8	499.93	+0.14	4	4	
29	9 12.9	259.38	0.00	4	9 17.4	541.31	+0.18	4	3	
Feb. 1	6 25.0	255.45	0.00	4	6 33.0	552.04	+0.16	4	3	
2	6 51.1	254.20	0.00	4	6 57.6	549.06	+0.15	4	3	
15	7 8.5	222.38	0.00	4	7 15.5	256.05	+0.08	4	3	
18	6 38.6	196.35	0.00	4	6 44.6	175.17	+0.06	4	2	
20	6 31.7	166.58	0.00	4	6 37.2	152.62	+0.05	4	2	
21	6 47.3	150.53	0.00	4	6 52.8	157.25	+0.05	4	2	
26	6 54.5	104.31	0.00	4	7 0.5	279.80	+0.08	4	3	
29	7 24.6	94.20	0.00	4	7 30.6	369.24	+0.12	4	3	

Observations of Iapetus—Continued.

PROFESSOR NEWCOMB'S OBSERVATIONS.

Date.	Wash. M. T.	p	Ref.	No.	Wash. M. T.	s	Ref.	No.	Wt.	Remarks.
1874.	h. m.	°	°		h. m.	″	″			
Sept. 26	8 9.5	54.11	−0.02	3	8 53.5	78.56	−0.04	3	3	
Oct. 1	7 48.0	83.98	0.00	2	8 42.0	262.87	+0.07	2	.	
2	7 56.0	85.18	0.00	2	8 7.0	298.06	+0.08	4	.	
3	7 38.0	86.48	0.00	3	7 56.0	329.64	+0.09	5	.	
13	8 3.0	92.88	0.00	2	. . .	. .	. .	.	.	
14	8 40.0	93.28	−0.01	2	8 30.0	500.64	+0.18	5	.	
15	8 31.0	93.84	0.01	2	8 52.0	498.77	+0.17	6	.	
19	8 30.0	95.84	−0.01	2	8 15.0	452.99	+0.16	5	.	
20	8 6.0	96.32	−0.01	2	8 12.0	433.76	+0.14	5	.	
23	8 3.0	98.37	−0.01	2	8 16.0	361.94	+0.11	5	.	
27	7 16.0	103.31	0.00	4	7 28.0	240.43	+0.07	5	.	

§ 4. The preceding observations were compared with the elements of the orbit given by Tisserand. But in order to test the periodic time, which is that given by Captain Jacob, considerable time was spent on the observations of Bernard, Marseilles, 1787; and when nothing could be made of these, I used the observation of Sir William Herschel, September 20, 1789, and the observations of Sir John Herschel, Cape of Good Hope, 1837. By comparing these with my observations near the conjunctions in 1880 and 1881, I found

$$\text{Periodic Time} = 79.3310152 \text{ days;}$$

and the corresponding daily motion, $4^\circ.53794773$. The observations were compared with the orbit by means of Bessel's auxiliary quantities f, F, g, G, h, H; from which we have—

$$\xi = r.\frac{\rho_0}{\rho} \sin f \sin (\mathrm{F} + u)$$

$$\eta = r.\frac{\rho_0}{\rho} \sin g \sin (\mathrm{G} + u)$$

$$\zeta = r.\frac{\rho_0}{\rho} \sin h \sin (\mathrm{H} + u)$$

ρ_0 is the mean distance of Saturn from the sun, and has been taken equal to 9.53885; ρ is the geocentric distance of the planet, and r the radius vector of the satellite. In computing the auxiliary quantities the effects of nutation on the inclination and node were computed and applied, though hardly sensible. The angle of position and distance are given by the equations,

$$\text{tang } s \sin p = \frac{\xi}{1 + \zeta}$$

$$\text{tang } s \cos p = \frac{\eta}{1 + \zeta}$$

As ϱ is always a small quantity relatively to unity, these expressions are readily computed by means of addition and subtraction logarithms. But in the present case we may put s for tang s without sensible error, since the distances measured are always less than 10′.

The following table contains the results of the comparison with the assumed elements. In the case of the differences of right ascension and declination the time of comparison is that of the difference of right ascension, since the reduction of the declination to this time is not sensible.

Comparison of the Observations.

DIFFERENCE OF RIGHT ASCENSION AND DECLINATION.

Date.	Wash. M. T.	Computed $\Delta\alpha$	$d.\Delta\alpha$	Computed $\Delta\delta$	$d.\Delta\delta$
1875.	h. m.	″	″	″	″
June 10	15 0.6	+507.54	−2.84	+12.61	+0.85
12	15 2.7	+517.13	−2.65	+12.70	+0.96
13	14 41.6	+516.87	−3.01	. .	. .
14	14 0.4	+513.46	−1.75	+12.43	+0.70
16	13 46.1	+496.62	−1.25	+11.76	−0.01
20	13 27.9	+425.49	−1.58	+ 9.38	+0.45
24	13 48.5	+310.30	+0.06	+ 5.80	+0.20
26	13 51.8	+239.98	+0.45	+ 3.71	+0.47
July 12	13 45.1	−385.31	+2.25	−11.42	−0.82
14	13 54.9	−442.72	+2.09	−12.10	−0.79
16	12 28.4	−488.31	+2.17	−12.35	−0.58
24	12 5.1	−551.81	−0.63	− 8.97	−1.39
26	12 17.0	−533.46	−0.21	− 7.10	−1.01
27	12 21.0	−519.10	−0.45	− 6.06	−1.55
29	11 43.4	−481.03	−0.53	− 3.82	−0.38
Aug. 25	9 48.2	+504.56	−1.31	+ 9.38	+0.68
26	9 55.7	+520.18	−2.48	+ 8.27	+0.94
29	9 54.6	+544.99	−1.65	+ 4.39	+0.47
30	10 22.6	+545.88	−2.50	+ 2.92	+0.46
31	9 20.3	+543.21	−1.13	+ 1.49	+0.62
Sept. 1	11 8.6	+536.27	−1.55	− 0.17	+0.49
2	9 29.8	+526.93	−0.48	− 1.62	+0.64
3	8 58.8	+513.95	−1.08	− 3.13	+0.72
4	9 28.8	+496.83	−0.72	− 4.76	+0.09
6	9 24.9	+453.98	−1.03	− 7.85	+0.01
7	9 8.9	+428.41	−0.70	− 9.32	+1.36
8	9 24.8	+399.54	−0.20	−10.77	−0.10
9	9 9.7	+368.81	+0.24	−12.12	+0.13
11	9 43.2	+299.32	−0.02	−14.64	−0.45
27	9 9.6	−337.16	+2.77	−16.57	−1.50
29	9 11.0	−398.33	+2.03	−14.53	−1.15
30	8 26.8	−424.48	+2.26	−13.34	−0.90

Date.	Wash. M. T.	Computed $\Delta\alpha$	$d.\Delta\alpha$	Computed $\Delta\delta$	$d.\Delta\delta$
1875.	h. m.	″	″	″	″
Oct. 2	7 40.3	−469.99	+1.99	−10.65	−1.34
5	7 20.4	−517.65	+1.19	− 6.02	−1.33
7	8 6.2	−534.21	+0.53	− 2.63	−1.34
9	6 51.4	−537.51	+0.56	+ 0.69	−1.24
12	7 7.7	−518.23	−0.05	+ 5.78	−1.08
13	8 1.2	−504.87	−0.84	+ 7.45	−1.03
17	6 40.8	−424.62	−0.77	+13.20	−0.58
19	7 4.5	−367.35	−2.08	+15.62	−0.57
21	7 6.9	−301.47	−1.31	+17.56	−0.51
22	6 40.0	−266.36	−1.08	+18.33	−0.43
22	6 57.4	−265.91	−1.34	. .	. .
Nov. 5	6 40.1	+283.82	−1.02	+15.31	+0.07
6	6 59.3	+316.40	−1.87	+14.20	+0.44
11	6 37.8	+439.60	−2.16	+ 7.73	+0.41
12	6 7.3	+455.55	−1.70	+ 6.34	+0.67
13	6 0.7	+468.77	2.28	+ 4.91	+0.49
16	6 12.5	+489.72	−2.03	. .	. .
17	5 50.3	+490.37	−2.37	− 0.78	+0.03
22	5 40.4	+447.89	−1.70	. .	. .
22	5 59.8	+447.67	−1.00	− 7.13	+0.30
24	6 2.1	+410.83	−1.32	− 9.25	+0.06
25	5 57.5	+388.76	−1.21	−10.19	+0.50
27	6 0.2	+337.82	−1.42	−11.88	+0.10
29	6 30.8	+278.57	−0.79	−13.17	+0.06
30	6 48.5	+246.46	−0.73	. .	. .
1876.					
June 5	15 46.0	−510.70	+1.38	−33.06	−0.39
6	15 29.5	−513.97	+1.40	−35.62	−0.36
7	15 45.3	−514.13	+1.51	−38.02	−0.40
8	15 32.5	−511.13	+2.19	−40.15	−0.18
9	15 35.3	−504.91	+0.86	−42.05	−0.33
10	15 43.3	−495.45	+0.62	−43.69	−0.39
July 15	14 45.4	+540.39	−0.74	+37.70	−0.62
16	15 3.0	+539.96	−0.90	+40.77	+0.86

Comparison of the Observations—Continued.

Date.	Wash. M. T.	Computed $\Delta\alpha$	$d.\Delta\alpha$	Computed $\Delta\delta$	$d.\Delta\delta$
1876.	h. m.	″	″	″	″
July 18	14 43.0	+528.76	−0.55	−44.22	+0.68
21	14 20.6	+486.83	−0.96	+47.10	+0.99
26	14 30.2	+356.47	+0.19	+45.69	−0.11
27	14 42.3	+322.57	+1.38	+44.48	+0.77
Aug. 21	12 14.0	−546.12	+2.28	−27.78	−0.33
22	11 19.8	−555.15	+2.18	−29.83	−0.35
24	12 42.5	−563.64	+1.44	−33.50	−0.70
25	11 35.5	−562.39	+0.63	. .	. .
26	10 58.8	−557.76	+1.00	−35.98	−0.43
27	11 4.0	−549.44	+0.45	−36.88	−0.36
28	11 9.2	−537.49	+0.46	−37.50	−0.87
29	10 57.1	−522.28	+0.40	−38.84	−1.71
31	10 45.7	−481.58	+0.40	−37.72	−0.47
Sept. 20	9 0.0	+314.99	−0.51	+ 5.31	+0.40
Oct. 2	9 11.6	+543.63	−1.76	+28.16	+0.91
9	8 4.6	+450.69	+0.20	+28.81	+0.45
11	8 40.4	+396.37	−0.02	+27.29	−0.27
16	8 42.5	+224.50	+1.32	+20.82	+0.27
18	9 6.9	+144.85	+2.40	+17.35	+0.12
24	8 5.9	−100.09	+3.73	. .	. .
31	8 13.3	−352.33	+3.25	− 8.90	−0.66
Nov. 1	6 59.0	−379.74	+3.28	−10.69	−0.50
7	7 18.4	−499.83	+2.04	−20.23	−0.33
8	7 20.3	−510.13	+1.49	−21.49	−1.06
12	5 25.8	−518.40	+1.41	−24.95	−0.86
22	6 47.5	−329.88	−0.03	−23.74	−0.37
24	7 44.9	−261.59	0.00	−21.69	−0.57
Dec. 7	5 54.9	+235.09	−0.75	+ 1.41	+0.60
12	5 51.8	+381.92	−1.17	+12.08	+0.20
15	6 22.2	+440.91	−1.74	+18.00	+0.79
19	5 44.3	+478.23	−1.40	+24.58	+0.69

Date.	Wash. M. T.	Computed $\Delta\alpha$	$d.\Delta\alpha$	Computed $\Delta\delta$	$d.\Delta\delta$
1876.	h. m.	″	″	″	″
July 24	14 21.9	+416.83	+0.46	+47.17	+0.51
1877.					
Aug. 11	13 23.8	+465.32	−1.74	+22.31	+0.62
15	13 19.1	+539.86	−1.14	+47.83	+0.42
16	12 13.9	+549.54	−1.15	+53.22	+0.48
17	12 14.9	+556.16	−0.98	+58.51	+0.19
18	13 14.1	+559.16	−1.00	+63.56	+0.04
27	12 33.9	+429.64	+1.95	+85.24	+0.28
Sept. 22	11 0.1	−518.98	+2.88	. .	. .
23	10 7.6	−534.05	+2.55	−37.15	−0.31
25	10 34.7	−555.33	+2.40	−46.96	−0.32
26	10 24.4	−560.54	+2.10	−51.28	−0.30
29	8 53.2	−555.11	+0.75	−61.87	−0.43
Oct. 1	9 24.5	−533.30	+1.14	−66.83	−0.34
6	8 47.8	−420.91	+0.87	−71.39	−0.51
9	8 14.2	−319.41	+0.26	−68.26	−0.20
31	6 34.2	+499.45	−0.53	+32.69	−0.37
Nov. 6	6 59.2	+531.95	−0.58	+55.75	−0.25
7	6 26.6	+525.54	+0.11	+58.35	−0.09
12	7 0.6	+445.64	+0.85	+65.98	+0.05
13	6 23.1	+421.90	+0.74	+66.32	+0.13
16	6 31.8	+334.67	+1.40	+65.04	−0.28
17	6 22.3	+301.86	+2.25	+63.85	−0.13
19	6 58.2	+230.18	+2.36	+60.37	−0.62
20	6 22.4	+193.77	+2.64	+58.19	+0.35
Dec. 7	7 18.6	−408.38	+3.48	−12.70	+0.36
9	6 39.8	−448.29	+3.27	−21.96	−0.07
10	5 53.5	−464.10	+2.52	−26.34	−0.03
12	6 12.2	−488.40	+2.59	−34.97	+0.06
13	6 1.3	−496.01	+1.75	−38.94	+0.07
14	6 18.8	−500.74	+1.83	−42.77	+0.23
15	6 12.9	−502.32	+1.92	−46.28	−0.36
19	6 19.5	−478.21	+1.21	−57.55	−0.18

ANGLE OF POSITION AND DISTANCE.

Date.	Wash. M. T.	Comp. p	Δp	Comp. s	Red. for Time.	Δs
1875.	h. m.	°	″	″	″	″
June 30	14 15.7	91.025	+0.44	81.83	−0.86	+3.24
Aug. 5	12 15.2	271.138	+1.01	254.44	−0.14	−0.95
8	12 4.0	273.835	+0.13	127.10	−0.23	−0.86
Sept. 14	9 1.0	95.45	+0.13	185.39	−1.18	+1.98

Date.	Wash. M. T.	Comp. p	Δp	Comp. s	Red. for Time.	Δs
1875.	h. m.	°	″	″	″	″
Sept. 16	8 53.4	100.55	0.00	103.67	−0.43	+2.63
19	8 21.5	230.97	−2.75	31.83	+0.29	−3.45
20	9 50.3	253.90	−2.01	72.54	+0.20	−3.99
Oct. 25	6 27.1	277.52	−0.24	152.06	−0.18	−0.27

Comparison of the Observations—Continued.

Date.	Wash. M. T.	Comp. p	Δp	Comp. s	Red. for Time.	Δs
1875.	h. m.	°	″	″	″	″
Oct. 27	6 46.5	286.54	+0.04	71.14	−0.32	−0.56
29	6 59.7	37.46	−0.19	25.25	+0.12	+0.20
Dec. 2	5 29.7	94.58	−0.29	181.68	−0.25	+2.53
1876.						
July 15	15 30.1	85.91	−1.42	541.79	−0.01	−0.18
16	15 41.4	85.67	−3.21	541.43	−0.03	+0.85
18	15 20.5	85.21	−2.41	530.37	0.06	−0.90
21	15 7.2	84.46	−1.28	488.51	−0.12	−1.11
26	15 3.5	82.68	−0.94	358.61	−0.16	+2.32
Aug. 5	13 8.5	299.23	+2.48	47.30	+0.34	−4.03
14	13 30.6	268.86	+0.41	393.93	+0.30	−4.37
20	12 2.0	267.27	−1.68	533.86	0.11	−3.49
21	13 4.5	267.08	−0.57	547.21	0.16	−4.13
22	12 0.0	266.92	1.65	556.20	+0.14	−4.28
26	11 46.2	266.30	−1.56	558.70	−0.05	−2.93
27	11 48.7	266.16	−0.86	550.36	−0.05	−2.15
28	11 56.8	266.00	−1.13	538.35	−0.11	−2.50
31	11 17.4	265.52	−1.60	482.53	−1.06	−1.30
Sept. 26	8 56.5	87.69	−1.54	489.00	+0.11	−0.04
28	9 1.0	87.44	−1.91	521.83	+0.19	+0.88
29	9 13.0	87.33	−1.12	532.88	+0.05	+1.02
Oct. 2	8 28.0	87.04	−2.19	544.38	−0.02	+0.39
3	8 50.9	86.95	−1.04	541.10	−0.04	+0.14
9	8 59.6	86.34	−2.75	450.70	−0.16	+1.61
11	9 11.2	86.06	−1.25	396.68	0.22	+1.64
13	8 59.8	85.69	+0.06	333.69	−0.10	+1.48
16	7 39.0	84.72	+1.31	227.15	0.16	+2.65
18	8 2.5	83.22	+0.59	147.66	0.13	+3.14
21	7 33.8	64.10	+2.14	26.84	−0.14	+3.70
24	7 38.3	273.19	+0.24	99.47	+0.25	−5.17
27	8 38.6	269.77	−1.06	217.74	+0.15	−5.19
31	7 32.3	268.56	−0.92	351.58	+0.20	−5.19
Nov. 1	7 59.3	268.38	−0.13	381.04	+0.19	−4.33
10	6 11.5	267.42	−0.82	520.49	+0.06	−2.93
12	5 55.6	267.24	−0.45	518.91	−0.01	−2.82
22	6 15.3	265.89	−0.98	331.47	−0.18	−1.39
24	6 43.9	265.28	−0.51	264.00	−0.15	−1.71
29	6 0.6	258.81	−0.25	74.97	−0.22	−1.00
Dec. 1	6 49.3	142.87	−1.01	13.65	+0.10	−0.03
5	5 29.6	91.02	−0.03	162.54	+0.14	+0.59
19	6 29.9	87.05	−0.42	478.97	+0.02	−0.02
July 24	14 58.9	83.51	−1.38	416.93	−0.16	+0.13

Date.	Wash. M. T.	Comp. p	Δp	Comp. s	Red. for Time.	Δs
1877.	h. m.	°	″	″	″	″
June 22	15 8.8	308.21	+3.52	86.53	+0.16	−3.85
23	15 13.6	294.14	+2.53	. . .	. . .	. . .
25	14 54.0	281.29	+1.34	187.75	+0.20	−5.15
Oct. 13	9 8.5	249.42	−0.60	163.87	−0.15	−1.84
14	8 29.6	243.91	−1.16	122.84	−0.13	−1.65
15	7 52.7	232.99	−1.25	83.34	−0.09	−1.57
16	7 58.8	204.56	−0.75	50.38	−0.10	−0.40
17	7 3.8	151.54	−0.53	47.12	+0.08	+0.28
18	6 41.9	118.77	−1.05	76.19	+0.12	+0.85
Nov. 27	6 52.2	292.56	+2.48	89.84	+0.16	−4.57
1878.						
Jan. 3	6 18.0	222.07	−0.83	63.73	−0.08	−0.70
4	6 26.6	184.60	−1.18	43.81	−0.03	+0.06
5	6 8.1	138.81	−0.14	52.85	+0.09	+0.39
Sept. 27	9 36.9	77.26	−0.18	524.47	−0.10	+1.69
28	9 41.7	76.43	−2.02	503.89	−0.11	+1.94
Oct. 1	9 47.6	73.46	−1.11	424.92	−0.15	+2.48
Nov. 2	7 55.3	261.09	−0.38	551.06	−0.02	−2.40
4	8 6.9	259.77	−0.37	530.61	−0.06	−2.50
13	8 19.9	249.62	+0.75	287.82	−0.13	−2.06
15	7 11.0	243.74	+0.33	212.80	−0.14	−2.05
18	8 57.6	216.19	−0.31	98.92	−0.12	−1.38
Dec. 6	7 24.0	83.77	−2.15	514.34	+0.06	−0.22
7	6 46.6	83.14	−0.55	522.00	+0.03	−0.46
16	6 56.1	77.10	−1.03	452.73	−0.09	+1.76
23	6 38.4	67.39	+0.95	259.16	−0.11	+4.04
27	6 47.0	46.76	+2.74	125.69	−0.12	+3.76
30	6 9.2	343.02	+5.12	75.05	+0.04	−0.88
1879.						
Oct. 7	11 5.4	147.58	−1.21	119.09	+0.05	−0.27
Nov. 12	8 59.6	38.41	+3.84	164.07	−0.14	+4.37
13	6 48.6	27.09	+4.20	137.52	−0.10	+3.93
14	7 34.1	8.82	+5.84	116.28	−0.05	+2.16
15	9 5.4	345.05	+6.16	109.97	+0.02	−0.67
16	7 18.3	325.19	+5.72	119.64	+0.08	−2.57
1880.						
Nov. 7	9 18.6	191.95	−0.68	144.57	−0.07	−1.17
8	8 14.1	173.57	−0.81	133.00	−0.02	−0.85
9	9 20.1	152.22	−1.22	136.87	+0.04	−0.29
Dec. 16	7 20.0	26.71	+5.16	167.13	−0.07	+4.12
17	7 9.1	13.30	+5.93	145.23	−0.05	+2.77
18	6 49.1	356.57	+6.77	132.90	−0.02	+1.22
19	5 32.1	338.84	+6.04	132.60	+0.04	+0.40

Comparison of the Observations—Continued.

Date.	Wash. M. T.	Comp. p	Δp	Comp. s	Red. for Time.	Δs
1881.	h. m.	°	″	″	″	″
Sept. 23	12 5.5	201.49	−0.51	183.63	−0.09	−1.25
24	11 53.6	187.70	−0.83	163.13	−0.06	−1.11
26	11 31.7	153.59	−0.16	156.27	+0.04	−0.73
1883.						
Oct. 15	13 8.4	63.61	+0.08	479.72	+0.12	+3.10
16	13 19.0	61.63	+0.87	452.41	+0.14	+2.88
24	12 13.4	22.54	+3.67	198.46	+0.09	+2.40
29	12 18.5	308.97	+3.08	198.02	−0.11	−2.59
30	11 58.1	299.10	+2.69	226.43	−0.24	−2.28
31	11 55.6	291.47	+2.49	259.04	−0.17	−2.79
Nov. 1	11 52.7	285.58	+2.20	293.51	−0.13	−2.63
3	11 33.2	277.18	+2.22	362.91	−0.11	−2.01
4	10 50.2	274.13	−0.69	395.58	0.12	−2.74
5	11 29.3	271.39	+0.52	428.48	−0.23	−2.67
27	9 50.5	229.61	−3.77	322.79	+0.14	−2.51
29	10 35.1	217.93	−2.28	251.63	+0.17	−2.49
30	9 50.6	209.78	−2.19	220.44	+0.18	−1.37
Dec. 1	10 4.6	198.67	−2.62	192.75	+0.11	−0.74
2	11 5.2	183.95	−3.07	172.69	+0.04	−0.32
3	10 28.8	167.87	−2.88	165.18	+0.01	+1.05
5	11 7.8	136.13	−1.11	188.40	−0.07	+1.17
6	10 16.9	124.94	−1.52	213.57	−0.13	+2.21
9	9 41.5	104.06	+0.49	313.76	−0.16	+1.40
10	9 55.1	99.79	+0.55	349.72	−0.18	+1.35
17	7 29.8	83.82	−0.77	551.46	−0.12	+0.36
17	9 52.3	83.67	−1.74	553.50	−0.06	+1.08
18	8 12.8	82.31	−0.60	571.10	−0.08	+0.60
21	8 54.9	78.31	−0.64	609.11	−0.04	+0.75
27	9 2.8	70.89	−0.62	593.00	+0.10	+1.89
28	9 14.4	69.54	−1.11	578.60	+0.11	+2.25
29	8 30.4	68.17	+1.67	561.81	+0.10	+2.51
1884.						
Jan. 2	9 27.5	61.19	−0.24	463.85	+0.17	+3.81
1884.	h. m.	°	″	″	″	″
Jan. 5	7 39.1	53.53	+0.97	371.15	+0.16	+3.00
6	7 47.0	49.90	+1.88	336.89	+0.42	+3.39
17	8 1.2	294.11	+3.44	246.03	−0.14	−2.95
20	7 58.6	278.69	+1.73	341.88	−0.17	−2.85
21	8 19.2	275.29	+2.41	373.42	−0.16	−2.90
22	7 23.7	272.55	+1.89	401.85	−0.13	−2.38
23	6 46.7	270.15	+1.50	428.87	−0.26	−2.50
25	8 23.8	265.90	+0.17	478.71	−0.12	−2.44
26	7 22.3	264.22	+0.35	497.82	−0.11	−2.14
29	9 12.9	259.48	+0.94	539.90	−0.03	−1.56
Feb. 1	6 25.0	255.51	+0.58	550.39	0.00	−1.81
2	6 51.1	254.13	−0.67	547.20	+0.01	−2.03
15	7 8.5	221.97	−1.82	254.52	+0.14	−1.76
18	6 38.6	195.43	−2.80	174.15	+0.08	−1.16
20	6 31.7	165.73	−2.27	153.05	0.00	+0.38
21	6 47.3	149.78	−2.08	158.58	−0.04	+1.33
26	6 54.5	104.49	+0.89	282.34	−0.14	+2.59
29	7 24.6	93.92	−1.81	371.15	−0.12	+1.91
PROFESSOR NEWCOMB'S OBSERVATIONS.						
1874.						
Sept. 26	8 9.5	53.85	−0.33	77.42	−0.94	−0.24
Oct. 1	7 48.0	83.78	−0.92	262.21	−1.26	+0.52
2	7 56.0	85.32	+0.73	296.90	−0.24	−1.01
3	7 38.0	86.52	+0.23	328.99	−0.37	−0.37
13	8 3.0	92.87	−0.09	. .	. .	. .
14	8 40.0	93.34	+0.61	501.80	−0.01	+0.37
15	8 31.0	93.79	−0.35	498.16	+0.08	−0.86
19	8 30.0	95.76	−0.46	452.34	−0.18	−0.63
20	8 6.0	96.32	+0.08	433.79	−0.06	−0.02
23	8 3.0	98.41	+0.32	362.57	+0.25	+0.27
27	7 16.0	103.27	−0.17	240.68	+0.29	−0.10

§ 5. The form of the equation of condition is

$$a.dE + b.edP + c.de + d.d\Delta + e, \sin J dN + f.dJ + \nu = 0,$$

in which dE, dP, de, $d\Delta$, dN, dJ are the corrections to the mean longitude, the longitude of the perisaturnium, the eccentricity, the mean distance, and the node and inclination referred to the equator. ν is the difference between the computed and the

observed co-ordinate. For the differences of right ascension and declination the elements of Iapetus give the following values of the coefficients:

$$a = \frac{\rho_0 \sin f}{\rho} . (0.0002) . \{\cos (F + u) + (8.4711) . \cos (F + 297^\circ + 25'.0)\}$$

$$b = \frac{-\rho_0 \sin f}{\rho} . (0.0002) . \{\cos (F+u) [(9.9998) \cos \varepsilon + 0.0148] + \cos (F + 297^\circ\ 25'.0)\}$$

$$c = \frac{\rho_0 \sin f}{\rho} . (0.0002) . \{\cos (F + u) \sin \varepsilon - (9.9998) \sin (F + 297^\circ\ 25'.0)\}$$

$$d = \frac{\xi}{(2.7113)} \qquad (\alpha)$$

$$e = \frac{\rho_0 \sin f}{\rho} . (7.7699) . \frac{r}{(2.7113)} . \cos (F + u) - \frac{\rho_0}{\rho} . \cos f . \frac{r \cos u}{(2.7113)}$$

$$f = \frac{\rho_0 \sin f}{\rho} . (9.2122) . \frac{r}{(2.7113)} . \cos (F + u) + \frac{\rho_0}{\rho} . \cos f . \frac{r \sin u}{(2.7113)}$$

In these expressions u is the argument of the latitude, and ε is the eccentric anomaly of the satellite. The coefficients for the difference of declination are found by putting *sin g* for *sin f*, G for F, and η for ξ. Where the eccentricity is so small the preceding expressions might be simplified by putting it equal to zero, and the coefficients would probably be accurate enough for the purpose, but it is easy to include the eccentricity.

The coefficients in the equations of condition for the distances and angles of position may be computed in the following manner. If v be the longitude of the satellite in its orbit, we first compute,

$$m \sin M = f' \cos (F' + v) \qquad n' \sin N' = f' \cos (F' + P)$$
$$m \cos M = g' \cos (G' + v) \qquad n' \cos N' = g' \cos (G' + P)$$

$$l \sin L = f' \sin (F' + P) \qquad k' \sin K' = \frac{\rho_0}{\rho} . \cos f$$

$$l \cos L = g' \sin (G' + P) \qquad k' \cos K' = \frac{\rho_0}{\rho} . \cos g$$

where

$$F' = F + w - n \qquad G' = G + w - n,$$
$$f' = \frac{\rho_0}{\rho} \sin f, \qquad g' = \frac{\rho_0}{\rho} \sin g,$$

w is the distance from the ecliptic to the equator on the orbit of the satellite, n is the

longitude of the node on the ecliptic, and i is the inclination of the orbit to the ecliptic If we put $\sin \varphi'$ for the eccentricity the coefficients for the distances are—

$$a = \frac{1}{\cos \varphi'} . \{m \cos (M - p) + n' \cos (N' - p) \sin \varphi'\}$$

$$b = \frac{-1}{\cos \varphi'} . \{m \cos (M - p) . [\cos \varepsilon \cos \varphi' + \tan g \tfrac{1}{2} \varphi'] + n' \cos (N' - p)\}$$

$$c = \frac{1}{\cos \varphi'} . \{m \cos (M - p) \sin \varepsilon - l \cos (L - p) \cos \varphi'\}$$

$$d = \frac{s}{\Delta}, \qquad (\Delta = \text{mean distance of satellite}). \qquad (\beta)$$

$$e = - r . \{m \cos (M - p) \cos w \tan g \tfrac{1}{2} i + k' \cos (K' - p) \cos u\}$$

$$f = + r . \{m \cos (M - p) \sin w \tan g \tfrac{1}{2} i + k' \cos (K' - p) \sin u\}$$

For the angles of position the coefficients are

$$a = \frac{1}{\cos \varphi'} . \{m \sin (M - p) + n' \sin (N' - p) \sin \varphi'\}$$

$$b = \frac{-1}{\cos \varphi'} . \{m \sin (M - p) . [\cos \varepsilon \cos \varphi' + \tan g \tfrac{1}{2} \varphi'] + n' \sin (N' - p)\}$$

$$c = \frac{1}{\cos \varphi'} . \{m \sin (M - p) \sin \varepsilon - l \sin (L - p) \cos \varphi'\}$$

$$d = 0,$$

$$e = - r . \{m \sin (M - p) \cos w \tan g \tfrac{1}{2} i + k' \sin (K' - p) \cos u\}$$

$$f = + r . \{m \sin (M - p) \sin w \tan g \tfrac{1}{2} i + k' \sin (K' - p) \sin u\}$$

The node and inclination are usually given with respect to the ecliptic, and J, N, and w may be computed by means of the equations

$$\begin{aligned}
\sin \tfrac{1}{2} J \cos \tfrac{1}{2} (w - N) &= \cos \tfrac{1}{2} n \sin \tfrac{1}{2} (\varepsilon + i) \\
\sin \tfrac{1}{2} J \sin \tfrac{1}{2} (w - N) &= \sin \tfrac{1}{2} n \sin \tfrac{1}{2} (\varepsilon - i) \\
\cos \tfrac{1}{2} J \cos \tfrac{1}{2} (w + N) &= \cos \tfrac{1}{2} n \cos \tfrac{1}{2} (\varepsilon + i) \\
\cos \tfrac{1}{2} J \sin \tfrac{1}{2} (w + N) &= \sin \tfrac{1}{2} n \cos \tfrac{1}{2} (\varepsilon - i)
\end{aligned}$$

where ε is the obliquity of the ecliptic.

The following tables contain the date and the Greenwich mean time of the observation corrected for aberration. The logarithms of the coefficients of the equations of condition follow, and also the logarithm of the independent term. The last column contains the residuals found by substituting the resulting values of the corrections to the elements in the equations of condition.

The computations on this satellite were begun several years ago At first I was assisted by Professor Frisby and Mr. Asaph Hall, jr., who computed the positions of the satellite and compared the observed differences of right ascension and declination. The coefficients for the corresponding equations of condition were computed in duplicate by Professor Frisby and myself. These equations were then reduced to normals and solved by Lieut. W. H. Allen and Ensign Hoogewerff, U. S. Navy. These gentlemen also made most of the computations for the observations of angle of position and distance in the case of my own observations. The computations for Professor Newcomb's observations were made by Prof. S. J. Brown, U. S. Navy. In all cases the computations for the position of the satellite, and for the coefficients, were made in duplicate. The sum of the coefficients in each equation was then formed, and these sums were used as a control in the least square solution. In this way, I think, the numerical work has been made essentially correct.

Equations of Condition.

DIFFERENCES OF RIGHT ASCENSION AND DECLINATION.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1875.									″
June 10	10.7853	9.2473	0.0096*n*	9.3957*n*	9.9943	8.4056	8.3990	0.4533*n*	−1.168
		7.4945	8.3819*n*	7.9200*n*	8.3893	9.9986*n*	8.6784*n*	9.9294	+0.114
12	12.7868	8.0751	9.9725*n*	9.5930*n*	0.0023	8.3885	7.7336*n*	0.4232*n*	−1.078
		7.0740*n*	8.3415*n*	8.0913*n*	8.3926	9.9994*n*	9.0595	9.9823	+0.273
13	13.7723	8.8402*n*	9.9615*n*	9.6722*n*	0.0021	8.3757	8.3114*n*	0.4786*n*	−1.492
14	14.7438	9.1720*n*	9.9563*n*	9.7407*n*	9.9992	8.3593	8.5474*n*	0.2430*n*	−0.291
		7.7280*n*	8.3242*n*	8.2230*n*	8.3830	9.9894*n*	9.4339	9.8451	+0.079
16	16.7340	9.4870*n*	9.9638*n*	9.8538*n*	9.9847	8.3146	8.8120*n*	0.0969*n*	+0.068
		7.9735*n*	8.3324*n*	8.3259*n*	8.3593	9.9672*n*	9.6287	8.0000*n*	−0.548
20	20.7217	9.7740*n*	0.0390*n*	9.9951*n*	9.9176	8.1651	9.0758*n*	0.1987*n*	−0.656
		8.2171*n*	8.4111*n*	8.4533*n*	8.2611	9.8818*n*	9.8455	9.6532	+0.119
24	24.7363	9.9144*n*	0.1443*n*	0.0457*n*	9.7805	7.8540	9.2100*n*	8.7782	+0.415
		8.3321*n*	8.5139*n*	8.4953*n*	8.0524	9.7140*n*	9.9599	9.3010	+0.110
26	26.7387	9.9565*n*	0.1923*n*	0.0406*n*	9.6689	7.4986	9.2508*n*	9.6532	+0.464
		8.3613*n*	8.5565*n*	8.4882*n*	7.8576	9.5734*n*	9.9941	9.6721	+0.506
July 12	12.7351	9.8702*n*	0.2264*n*	9.1098*n*	9.8745*n*	8.3288*n*	9.1582*n*	0.3522	+0.018
		7.9604*n*	8.4054*n*	8.1230*n*	8.3462*n*	9.9086	9.8606	9.9138*n*	+0.006
14	14.7421	9.7946*n*	0.1855*n*	8.9222*n*	9.9348*n*	8.3473*n*	9.0827*n*	0.3201	−0.110
		7.6889*n*	8.3104*n*	8.1659*n*	8.3716*n*	9.9592	9.7753	9.8976*n*	+0.077
16	16.6821	9.6932*n*	0.1398*n*	8.9379*n*	9.9774*n*	8.3537*n*	9.9827*n*	0.3365	+0.100
		6.7694*n*	8.2029*n*	8.2370*n*	8.3803*n*	9.9944	9.6602	9.7634*n*	+0.310
24	24.6662	9.1579	9.9798*n*	9.7284*n*	0.0305*n*	8.2568*n*	8.3468	9.7993*n*	−1.264
		8.2114	7.8917*n*	8.5522*n*	8.2415*n*	0.0261	9.2757*n*	0.1430*n*	−0.599
26	26.6746	9.4939	9.9805*n*	9.8502*n*	0.0158*n*	8.1960*n*	8.7183	9.3222*n*	−0.336
		8.2904	7.9552*n*	8.6023*n*	8.1407*n*	0.0068	9.5453*n*	0.0043*n*	−0.293
27	27.6774	9.5956	9.9898*n*	9.8995*n*	0.0040*n*	8.1584*n*	8.8248	9.6532*n*	−0.318
		8.3193	8.0019*n*	8.6211*n*	8.0713*n*	9.9926	9.6326*n*	0.1903*n*	−0.877
29	29.6513	9.7403	0.0234*n*	9.9770*n*	9.9709*n*	8.0642*n*	8.7928	9.7243*n*	+0.100
		8.3614	8.1013*n*	8.6477*n*	7.8703	9.9545	9.7596*n*	9.5798*n*	+0.212

Equations of Condition—Continued.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1875.									″
Aug. 25	25.5715	9.6246	0.1039*n*	9.3060*n*	9.9916	8.0151	8.8155	0.1173*n*	+0.679
		8.3760*n*	8.3504	8.6589*n*	8.2610	9.9972*n*	9.5500*n*	9.8325	—0.162
26	26.5767	9.5250	0.0744*n*	9.3856*n*	0.0048	7.9896	8.7074	0.3945*n*	—0.548
		8.4114*n*	8.3613	8.6872*n*	8.2064	0.0089*n*	9.4345*n*	9.9731	+0.101
29	29.5759	8.8462	9.9958*n*	9.6361*n*	0.0251	7.8817	7.8286	0.2175*n*	+0.111
		8.4831*n*	8.3404	8.7562*n*	7.9310	0.0254*n*	8.2076*n*	9.6721	—0.323
30	30.5953	8.3091*n*	9.9763*n*	9.7109*n*	0.0258	7.8300	7.9241*n*	0.3979*n*	—0.801
		8.4979*n*	8.3149	8.7734*n*	7.7546	0.0249*n*	8.8551	9.6628	—0.307
31	31.5519	9.0196*n*	9.9632*n*	9.7746*n*	0.0237	7.7720	8.3520*n*	0.0531*n*	+0.507
		8.5079*n*	8.2829	8.7864*n*	7.4628	0.0219*n*	9.1860	9.7924	—0.117
Sept. 1	1.6272	9.2962*n*	9.9553*n*	9.8385*n*	0.0181	7.6953	8.5809*n*	0.1903*n*	+0.013
		8.5147*n*	8.2370	8.7974*n*	6.5069*n*	0.0153*n*	9.3881	9.6902	—0.209
2	2.5585	9.4418*n*	9.9548*n*	9.8873*n*	0.0105	7.6120	8.7104*n*	9.6812*n*	+1.012
		8.5171*n*	8.1877	8.8037*n*	7.4979*n*	0.0070*n*	9.5073	9.8062	—0.022
3	3.5370	9.5522*n*	9.9602*n*	9.9321*n*	9.9996	7.5015	8.8113*n*	0.0334*n*	+0.331
		8.5157*n*	8.1259	8.8070*n*	7.7866*n*	9.9953*n*	9.6023	9.8573	+0.102
4	4.5578	9.6412*n*	9.9722*n*	9.9730*n*	9.9849	7.3499	8.8944*n*	9.8573*n*	+0.598
		8.5107*n*	8.0489	8.8072*n*	7.9661*n*	9.9799*n*	9.6814	8.9542	—0.479
6	6.5550	9.7672*n*	0.0106*n*	0.0351*n*	9.9457	6.6362	9.0139*n*	0.0128*n*	+0.077
		8.4890*n*	7.8605	8.7974*n*	8.1835*n*	9.9392*n*	9.7969	8.0000	—0.454
7	7.5439	9.8141*n*	0.0346*n*	0.0579*n*	9.9206	6.6491*n*	9.0586*n*	9.8451*n*	+0.288
		8.4721*n*	7.7459	8.7879*n*	8.2579*n*	9.9133*n*	9.8408	0.1335	+0.954
8	8.5549	9.8543*n*	0.0610*n*	0.0760*n*	9.8903	7.0901*n*	9.0979*n*	9.3010*n*	+0.655
		8.4500*n*	7.6177	8.7751*n*	8.3208*n*	9.8822*n*	9.8790	9.0000*n*	—0.445
9	9.5443	9.8878*n*	0.0875*n*	0.0891*n*	9.8555	7.3149*n*	9.1300*n*	9.3802	+0.955
		8.4235*n*	7.4933	8.7597*n*	8.3725*n*	9.8467*n*	9.9109	9.1139	—0.153
11	11.5676	9.9407*n*	0.1408*n*	0.1013*n*	9.7648	7.5426*n*	9.1815*n*	8.3010*n*	+0.379
		8.3515*n*	7.3379	8.7203*n*	8.4544*n*	9.7543*n*	9.9623	9.6532*n*	—0.601
27	27.5433	9.9063*n*	0.2404*n*	9.5263*n*	9.8165*n*	7.7093*n*	9.1459*n*	0.4425	+0.770
		8.3724	8.6206	8.5949*n*	8.5107*n*	9.8151	9.9353	0.1761*n*	—0.675
29	29.5441	9.8449*n*	0.2053*n*	9.3926*n*	9.8889*n*	7.6054*n*	9.0839*n*	0.3075	—0.014
		8.4554	8.6627	8.6502*n*	8.4511*n*	9.8871	9.8767	0.0607*n*	—0.252
30	30.5134	9.8074*n*	0.1849*n*	9.3401*n*	9.9166*n*	7.5503*n*	9.0475*n*	0.3541	+0.231
		8.4868	8.6756	8.6776*n*	8.4137*n*	9.9148	9.8413	9.9542*n*	+0.027
Oct. 2	2.4810	9.7108*n*	0.1381*n*	9.2931*n*	9.9608*n*	7.3868*n*	8.9536*n*	0.2989	+0.062
		8.5373	8.6883	8.7316*n*	8.3159*n*	9.9590	9.7506	0.1271*n*	—0.369
5	5.4669	9.4740*n*	0.0580*n*	9.4011*n*	0.0027*n*	6.7741*n*	8.7291*n*	0.0755	—0.405
		8.5862	8.6739	8.8009*n*	8.0683*n*	0.0014	9.5357	0.1239*n*	—0.332
7	7.4985	9.1475*n*	0.0045*n*	9.5391*n*	0.0164*n*	0.8366	8.4390*n*	9.7243	—0.728
		8.6029	8.6404	8.8355*n*	7.7082*n*	0.0156	9.2637	0.1271*n*	—0.353
9	9.4465	8.1562	9.9627*n*	9.6721*n*	0.0191*n*	7.2523	7.3127*n*	9.7482	—0.306
		8.6073	8.5897	8.8577*n*	7.1360	0.0187	8.4328	0.0934*n*	—0.287
12	12.4575	9.4036	9.9335*n*	9.8453*n*	0.0032*n*	7.5348	8.5647	8.6990*n*	—0.224
		8.5923	8.4749	8.8697*n*	8.0510	0.0040	9.3282*n*	0.0334*n*	—0.221
13	13.4946	9.5232	9.9362*n*	9.8936*n*	9.9919*n*	7.5925	8.6952	9.9243*n*	—0.762
		8.5804	8.4248	8.8671*n*	8.1608	9.9930	9.4668*n*	0.0128*n*	—0.215

Equations of Condition—Continued.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1875.									″
Oct. 17	17. 4384	9. 7898	0. 0006*n*	0. 0252*n*	9. 9167*n*	7. 7347	8. 9742	9. 8865*n*	+0. 247
		8. 4996	8. 2020	8. 8266*n*	8. 4094	9. 9199	9. 7582*n*	9. 7634*n*	+0. 022
19	19. 4547	9. 8694	0. 0536*n*	0. 0623*n*	9. 8538*n*	7. 7738	9. 0550	0. 3181*n*	—0. 635
		8. 4297	8. 0966	8. 7877*n*	8. 4824	9. 8585	9. 8418*n*	9. 7559*n*	—0. 100
21	21. 4562	9. 9269	0. 1083*n*	0. 0797*n*	9. 7679*n*	7. 7952	9. 1124	0. 1173*n*	+0. 501
		8. 3318	8. 0412	8. 7377*n*	8. 5332	9. 7745	9. 9013*n*	9. 7076*n*	—0. 181
22	22. 4374	9. 9487	0. 1340*n*	0. 0812*n*	9. 7142*n*	7. 8007	9. 1340	0. 0334*n*	+0. 883
		8. 2691	8. 0427	8. 7101*n*	8. 5519	9. 7219	9. 9237*n*	9. 6335*n*	—0. 173
22	22. 4495	9. 9489	0. 1343*n*	0. 0812*n*	9. 7134*n*	7. 8008	9. 1342	0. 1271*n*	+0. 625
Nov. 5	5. 4362	9. 9201	0. 2263*n*	9. 5573*n*	9. 7417	7. 5459	9. 1000	0. 0086*n*	+1. 247
		8. 3933*n*	8. 6463	8. 5634*n*	8. 4737	9. 7374*n*	9. 8973*n*	8. 8451	—0. 567
6	6. 4494	9. 8918	0. 2094*n*	9. 4838*n*	9. 7889	7. 4993	9. 0713	0. 2718*n*	+0. 335
		8. 4316*n*	8. 6629	8. 5898*n*	8. 4409	9. 7855*n*	9. 8691*n*	9. 6435	—0. 233
11	11. 4340	9. 6590	0. 0875*n*	9. 3149*n*	9. 9318	7. 1333	8. 8317	0. 3345*n*	—0. 266
		8. 5431*n*	8. 6745	8. 7200*n*	8. 1769	9. 9308*n*	9. 6330*n*	9. 6128	—0. 361
12	12. 4128	9. 5835	0. 0586*n*	9. 3515*n*	9. 9472	7. 0027	8. 7523	0. 2304*n*	+0. 137
		8. 5535*n*	8. 6633	8. 7408*n*	8. 0906	9. 9466*n*	9. 5551*n*	9. 8261	—0. 105
13	13. 4081	9. 4877	0. 0287*n*	9. 4065*n*	9. 9597	6. 8267	8. 6499	0. 3579*n*	—0. 503
		8. 5610*n*	8. 6467	8. 7593*n*	7. 9796	9. 9592*n*	9. 4550*n*	9. 6902	—0. 283
16	16. 4160	8. 8585	9. 9466*n*	9. 6111*n*	9. 9786	6. 4351*n*	7. 8735	0. 3075*n*	—0. 417
17	17. 4005	7. 6918*n*	9. 9262*n*	9. 6754*n*	9. 9792	6. 7794*n*	7. 6864*n*	0. 3747*n*	—0. 813
		8. 5620*n*	8. 5315	8. 8041*n*	7. 1828*n*	9. 9790*n*	8. 3504	8. 4771	—0. 683
22	22. 3931	9. 5730*n*	9. 9116*n*	9. 9232*n*	9. 9399	7. 3040*n*	8. 8133*n*	0. 2304*n*	—0. 485
22	22. 4066	9. 5739*n*	9. 9117*n*	9. 9236*n*	9. 9397	7. 3041*n*	8. 8143*n*	0. 0000*n*	+0. 214
		8. 5039*n*	8. 2596	8. 7933*n*	8. 1420*n*	9. 9386*n*	9. 5970	9. 4771	—0. 237
24	24. 4080	9. 7028*n*	9. 9475*n*	9. 9844*n*	9. 9024	7. 3902*n*	8. 9391*n*	0. 1206*n*	—0. 290
		8. 4623*n*	8. 1035	8. 7693*n*	8. 2550*n*	9. 9004*n*	9. 7231	8. 7782	—0. 382
25	25. 4047	9. 7509*n*	9. 9630*n*	0. 0071*n*	9. 8784	7. 4207*n*	8. 9869*n*	0. 0828*n*	—0. 281
		8. 4369*n*	8. 0141	8. 7539*n*	8. 2972*n*	9. 8759*n*	9. 7707	9. 6990	+0. 110
27	27. 4064	9. 8260*n*	0. 0232*n*	0. 0384*n*	9. 8174	7. 4971*n*	9. 0619*n*	0. 1523*n*	—0. 728
		8. 3781*n*	7. 8125	8. 7172*n*	8. 3634*n*	9. 8134*n*	9. 8457	9. 0000	—0. 181
29	29. 4275	9. 8803*n*	0. 0767*n*	0. 0516*n*	9. 7336	7. 5526*n*	9. 1177*n*	9. 8976*n*	—0. 370
		8. 2999*n*	8. 5987	8. 6692*n*	8. 4084*n*	9. 7272*n*	9. 9005	8. 7782	—0. 103
30	30. 4397	9. 9012*n*	0. 1023*n*	0. 0514*n*	9. 6804	7. 5824*n*	9. 1394*n*	9. 8633*n*	—0. 458
1876.									
June 5	5. 8158	8. 9984*n*	0. 0046*n*	8. 7649*n*	9. 9969*n*	8. 8589*n*	7. 9650*n*	0. 1399	—0. 338
		8. 8052*n*	8. 9946*n*	9. 0290	8. 8080*n*	9. 9935	9. 2425*n*	9. 5911*n*	+0. 038
6	6. 8044	8. 3746*n*	9. 9950*n*	9. 1141*n*	9. 9996*n*	8. 8494*n*	7. 9418	0. 1461	—0. 237
		8. 7701*n*	8. 9688*n*	9. 0146	8. 8404*n*	9. 9863	9. 3968*n*	9. 5563*n*	+0. 068
7	7. 8154	8. 7397	9. 9903*n*	9. 3166*n*	9. 9998*n*	8. 8369*n*	8. 4337	0. 1790	+0. 064
		8. 7274*n*	8. 9436*n*	8. 9951	8. 8687*n*	9. 9762	9. 5109*n*	9. 6021*n*	+0. 026
8	8. 8067	9. 1220	9. 9904*n*	9. 4547*n*	9. 9972*n*	8. 8212*n*	8. 6540	0. 3404	+0. 933
		8. 6776*n*	8. 9216*n*	8. 9714	8. 8924*n*	9. 9632	9. 5976*n*	9. 2553*n*	+0. 239
9	9. 8087	9. 3242	9. 9962*n*	9. 5605*n*	9. 9919*n*	8. 8017*n*	8. 7995	9. 9345	—0. 205
		8. 6165*n*	8. 9031*n*	8. 9420	8. 9125*n*	9. 9467	9. 6685*n*	9. 5185*n*	+0. 079

Equations of Condition—Continued.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1876.									″
June 10	10. 8144	9. 4611	0. 0074*n*	9. 6437*n*	9. 9837*n*	8. 7784*n*	8. 9069	9. 7924	—0. 256
		8. 5407*n*	8. 8893*n*	8. 9072	8. 9291*n*	9. 9267	9. 7276*n*	9. 5911*n*	+0. 007
July 15	15. 7770	8. 1485	0. 0148*n*	9. 3370*n*	0. 0214	8. 8467	8. 3925*n*	9. 8692*n*	+0. 047
		8. 7551	8. 9811*n*	8. 9714	8. 8651	0. 0003*n*	9. 5075	9. 7924*n*	—1. 309
16	16. 7893	8. 8584*n*	0. 0107*n*	9. 4829*n*	0. 0211	8. 8435	8. 6544*n*	9. 9542*n*	—0. 198
		8. 7015	8. 9561*n*	8. 9421	8. 8991	9. 9893*n*	9. 6042	9. 9345	+0. 188
18	18. 7756	9. 3773*n*	0. 0197*n*	9. 6748*n*	0. 0120	8. 7939	8. 9152*n*	9. 7404*n*	—0. 055
		8. 5642	8. 9187*n*	8. 8674	8. 9343	9. 9584*n*	9. 7422	9. 8325	+0. 048
21	21. 7602	9. 6751*n*	0. 0686*n*	9. 8409*n*	9. 9761	8. 7019	9. 1307*n*	9. 9823*n*	—0. 883
		8. 1756	8. 9031*n*	8. 7043	8. 9617	9. 8837*n*	9. 8766	9. 9956	+0. 442
26	26. 7672	9. 9013*n*	0. 1884*n*	9. 9379*n*	9. 8407	8. 3864	9. 3118*n*	9. 2788	—0. 662
		8. 3221*n*	8. 9838*n*	8. 2626	9. 8485	9. 6364*n*	9. 9979	9. 0414*n*	—0. 476
27	27. 7756	9. 9284*n*	0. 2119*n*	9. 9366*n*	9. 7973	8. 2753	9. 3338*n*	0. 1399	+0. 317
		8. 4434*n*	9. 0086*n*	8. 1491	8. 9368	9. 5512*n*	0. 0115	9. 8865	+0. 445
Aug. 21	21. 6733	9. 4257*n*	0. 0767*n*	8. 2615	0. 0260*n*	8. 8449*n*	8. 7077*n*	0. 3579	—0. 043
		8. 7513*n*	9. 0050*n*	8. 8895	8. 7324*n*	0. 0420	8. 2954	9. 5185*n*	+0. 217
22	22. 6357	9. 2713*n*	0. 0580*n*	8. 6701*n*	0. 0331*n*	8. 8388*n*	8. 5149*n*	0. 3385	+0. 041
		8. 7139*n*	8. 9779*n*	8. 8731	8. 7634*n*	0. 0409	8. 7869*n*	9. 5441*n*	+0. 208
24	24. 6931	8. 0604*n*	0. 0292*n*	9. 3189*n*	0. 0397*n*	8. 8173*n*	7. 8282	0. 1584	—0. 269
		8. 6108*n*	8. 9219*n*	8. 8183	8. 8138*n*	0. 0302	9. 3669*n*	9. 8451*n*	—0. 133
25	25. 6466	8. 8513	0. 0228*n*	9. 4632*n*	0. 0387*n*	8. 8030*n*	8. 3974	9. 7993	—0. 875
26	26. 6212	9. 1915	0. 0214*n*	9. 5753*n*	0. 0352*n*	8. 7854*n*	8. 6376	0. 0000	—0. 292
		8. 4714*n*	8. 8787*n*	8. 7392	8. 8447*n*	0. 0092	9. 5889*n*	9. 6335*n*	+0. 133
27	27. 6248	9. 3838	0. 0254*n*	9. 6670*n*	0. 0286*n*	8. 7638*n*	8. 7929	9. 6532	—0. 625
		8. 3713*n*	8. 8613*n*	8. 6846	8. 8555*n*	9. 9937	9. 6680*n*	9. 5563*n*	+0. 195
28	28. 6284	9. 5153	0. 0348*n*	9. 7409*n*	0. 0191*n*	8. 7383*n*	8. 9047	9. 6628	—0. 399
		8. 2375*n*	8. 8497*n*	8. 6192	8. 8627*n*	9. 9749	9. 7327*n*	9. 9395*n*	—0. 327
29	29. 6200	9. 6133	0. 0490*n*	9. 8003*n*	0. 0066*n*	8. 7088*n*	8. 9901	9. 6021	—0. 250
		8. 0428*n*	8. 8438*n*	8. 5415	8. 8666*n*	9. 9525	9. 7858*n*	0. 2330*n*	—1. 184
31	31. 6120	9. 7562	0. 0891*n*	9. 8882*n*	9. 9714*n*	8. 6325*n*	9. 1156	9. 6021	+0. 143
		7. 1904	8. 8509*n*	8. 3298	8. 8652*n*	9. 8945	9. 8692*n*	9. 6721*n*	+0. 009
Sept. 20	20. 5381	9. 9569	0. 2732*n*	8. 3141	9. 7870	8. 6691	9. 2451	9. 7076*n*	+0. 660
		8. 8133	9. 0903*n*	8. 5338	8. 0137	9. 8923*n*	9. 8381*n*	9. 6021	—0. 110
Oct. 2	2. 5456	8. 4298*n*	0. 0050*n*	9. 5369*n*	0. 0240	8. 7112	8. 3601*n*	0. 2455*n*	—0. 952
		8. 3609	8. 8065*n*	8. 4654	8. 7383	0. 0098*n*	9. 4366	9. 9590	+0. 191
9	9. 4986	9. 7593*n*	0. 0742*n*	9. 9391*n*	9. 9426	8. 5151	9. 1378*n*	9. 3010	+0. 124
		7. 9952*n*	8. 7744*n*	7. 6073*n*	8. 7484	9. 8675*n*	9. 8856	9. 6532	—0. 112
11	11. 5233	9. 8382*n*	0. 1209*n*	9. 9717*n*	9. 8940	8. 4192	9. 2071*n*	8. 3010*n*	—0. 424
		8. 2457*n*	8. 8054*n*	8. 0287*n*	8. 7275	9. 7951*n*	9. 9362	9. 4314*n*	—0. 766
16	16. 5244	9. 9672*n*	0. 2327*n*	9. 9667*n*	9. 6399	7. 7584	9. 3217*n*	0. 1206	—0. 098
		8. 5580*n*	8. 9143*n*	8. 2835*n*	8. 6071	9. 3769*n*	0. 0158	9. 4314	—0. 001
18	18. 5412	9. 9904*n*	0. 2642*n*	9. 9215*n*	9. 4496	7. 3774*n*	9. 3415*n*	0. 3802	+0. 592
		8. 6174*n*	8. 9519*n*	8. 2461*n*	8. 5280	8. 8874*n*	0. 0253	9. 0792	—0. 057
24	24. 4984	9. 9947*n*	0. 2984*n*	9. 6045*n*	9. 2891*n*	8. 3920*n*	9. 3378*n*	0. 5717	+1. 005

Equations of Condition—Continued.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1876.									″
Oct. 31	31.5029	9.8739*n*	0.2240*n*	8.5307	9.8356*n*	8.6375*n*	9.2063*n*	0.5119	+0.269
		8.6769*n*	8.9798*n*	8.4006	8.2381*n*	9.9144	9.8100	9.8195*n*	—0.256
Nov. 1	1.4513	9.8435*n*	0.2053*n*	8.7823	9.8682*n*	8.6544*n*	9.1741*n*	0.5159	+0.347
		8.6639*n*	8.9663*n*	8.4422	8.3176*n*	9.9365	9.7667	9.6990*n*	—0.061
7	7.4642	9.4825*n*	0.0616*n*	8.1270*n*	9.9875*n*	8.6980*n*	8.7928*n*	0.3096	—0.189
		8.5086*n*	8.8431*n*	8.5145	8.5948*n*	0.0072	9.1548	9.5185*n*	+0.254
8	8.4654	9.3545*n*	0.0378*n*	8.8212*n*	9.9964*n*	8.6959*n*	8.6559*n*	0.1732	—0.565
		8.4637*n*	8.8186*n*	8.4971	8.6210*n*	0.0092	8.7901	0.0253*n*	—0.524
12	12.3856	8.8672	9.9792*n*	9.5168*n*	0.0034*n*	8.6637*n*	8.2683	0.1492	+0.096
		8.6695*n*	8.7820*n*	8.7187	8.6858*n*	9.9914	9.3864*n*	9.9345*n*	—0.329
22	22.4413	9.8843	0.1352*n*	9.9500*n*	9.8071*n*	8.2865*n*	9.2002	8.4771*n*	+0.383
		8.3676	8.8047*n*	8.0623*n*	8.6642*n*	9.6902	9.9203*n*	9.5682*n*	—0.011
24	24.4810	9.9351	0.1829*n*	9.9463*n*	9.7063*n*	8.0693*n*	9.2469	— ∞	+0.629
		8.4875	8.8571*n*	8.1573*n*	8.6250*n*	9.5334	9.9515*n*	9.7559*n*	—0.304
Dec. 7	7.4033	9.9370	0.2437*n*	8.8280*n*	9.6599	8.5556	9.2259	9.8751*n*	+0.302
		8.7479	9.0301*n*	8.3546	7.4387	9.7876*n*	9.8415*n*	9.7782	+0.205
12	12.4008	9.7784	0.1423*n*	8.9466	9.8707	8.6729	9.0474	0.0682*n*	—0.144
		8.7160	8.9815*n*	8.6201	8.3709	9.9259*n*	9.5845*n*	9.3010	—0.369
15	15.4216	9.5968	0.0625*n*	8.5451	9.9331	8.7019	8.8317	0.2405*n*	—0.770
		8.6596	8.9235*n*	8.6691	8.5439	9.9610*n*	9.2164*n*	9.8976	+0.164
19	19.3949	9.0054	9.9728*n*	9.2411*n*	9.9683	8.7000	7.7033	0.1461*n*	—0.588
		8.5274	8.8341*n*	8.6427	8.6793	9.9653*n*	9.1266	9.8388	+0.048
July 24	24.7612	8.8325*n*	0.1399*n*	9.9207*n*	9.9087	8.5518	9.2570*n*	9.6628	+1.043
		7.8401*n*	8.9396*n*	8.4670	8.9623	9.7613*n*	9.9608	9.7076	+0.066
1877.									
Aug. 11	11.7217	9.7777	0.1470*n*	9.6711	9.9564	9.0939	9.0016	0.2405*n*	—0.393
		9.2195	9.3319*n*	9.3974	8.6372	0.0227*n*	8.7516*n*	9.7924	+0.213
15	15.7186	9.4369	0.0615*n*	9.3500	0.0210	9.0775	7.9711	0.0569*n*	—0.088
		9.1511	9.2063*n*	9.3906	8.9684	0.0163*n*	9.4519	9.6232	+0.124
16	16.6734	9.2806	0.0486*n*	9.1633	0.0287	9.0667	8.1121*n*	0.0607*n*	—0.216
		9.1258	9.1733*n*	9.3799	9.0148	0.0079*n*	9.5583	9.6812	+0.214
17	17.6741	9.0149	0.0400*n*	8.7743	0.0339	9.0520	8.5590*n*	9.9912*n*	—0.188
		9.0950	9.1388*n*	9.3652	9.0559	9.9962*n*	9.6453	9.2788	—0.047
18	18.7153	8.0907	0.0366*n*	8.5120*n*	0.0362	9.0333	8.7798*n*	0.0000*n*	—0.375
		9.0573	9.1046*n*	9.3457	9.0919	9.9805*n*	9.7180	8.6021	—0.143
27	27.6878	9.8412*n*	0.1875*n*	9.7695*n*	9.9218	8.6257	9.3699*n*	0.2900	+0.615
		7.7795	9.0821*n*	9.0366	9.2194	9.6231*n*	0.0114	9.4472	+0.320
Sept. 22	22.6225	9.6272*n*	0.1098*n*	9.5465	0.0039*n*	9.0673*n*	8.8792*n*	0.4594	+0.110
23	23.5860	9.5405*n*	0.0893*n*	9.4678	0.0163*n*	9.0625*n*	8.7363*n*	0.4065	—0.082
		9.1034*n*	9.2144*n*	9.3269	8.8587*n*	0.0405	8.9967*n*	9.4914*n*	—0.056
25	25.6047	9.2537*n*	0.0550*n*	9.1622	0.0332*n*	9.0451*n*	7.9675*n*	0.3802	+0.069
		9.0527*n*	9.1486*n*	9.3089	8.9604*n*	0.0279	9.4256*n*	9.5051*n*	—0.092
26	26.5976	8.9737*n*	0.0442*n*	8.7977	0.0373*n*	9.0317*n*	8.1144	0.3222	—0.079
		9.0209*n*	9.1155*n*	9.2941	8.9986*n*	0.0175	9.5394*n*	9.4771*n*	—0.087

Equations of Condition—Continued.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log	Residual.
1877.									″
Sept. 29	29. 5341	9. 2098	0. 0423*n*	9. 2903*n*	0. 0331*n*	8. 9727*n*	8. 8895	9. 8751	—0. 972
		8. 8899*n*	9. 0310*n*	9. 2271	9. 0802*n*	9. 9684	9. 7541*n*	9. 6335*n*	—0. 283
Oct. 1	1. 5558	9. 5272	0. 0668*n*	9. 5600*n*	0. 0157*n*	8. 9121*n*	9. 0772	0. 0569	—0. 273
		8. 7487*n*	8. 9972*n*	9. 1593	9. 1137*n*	9. 9158	9. 8468*n*	9. 5315*n*	—0. 248
6	6. 5301	9. 8598	0. 1788*n*	9. 7960*n*	9. 9129*n*	8. 6421*n*	9. 3129	9. 9395	+0. 179
		7. 1773	9. 0516*n*	8. 9334	9. 1423*n*	9. 6796	9. 9765*n*	9. 7076*n*	—0. 585
9	9. 5066	9. 9571	0. 2479*n*	9. 7976	9. 7930*n*	8. 2557*n*	9. 3824	9. 4150	—0. 029
		8. 5585	9. 1425*n*	8. 7937	9. 1229*n*	9. 3654	0. 0093*n*	9. 3010*n*	—0. 385
31	31. 4357	9. 6015	0. 0868*n*	9. 3762	9. 9872	9. 0049	8. 7466	9. 7243*n*	+0. 608
		9. 0669	9. 2047*n*	9. 2451	8. 8031	0. 0141*n*	8. 7325	9. 5682*n*	—0. 783
Nov. 6	6. 4526	9. 0066*n*	0. 0159*n*	9. 3507*n*	0. 0146	8. 9308	8. 8483*n*	9. 7634*n*	—0. 170
		8. 8597	9. 0255*n*	9. 1543	9. 0349	9. 9558*n*	9. 7206	9. 3979*n*	—0. 511
7	7. 4299	9. 2574*n*	0. 0219*n*	9. 4812*n*	0. 0093	8. 9072	8. 9543*n*	9. 0414	+0. 287
		8. 8040	9. 0049*n*	9. 1259	9. 0548	9. 9350*n*	9. 7726	8. 9542*n*	—0. 323
12	12. 4531	9. 7403*n*	0. 1098*n*	9. 7833*n*	9. 9377	8. 7095	9. 2514*n*	9. 9294	—0. 021
		8. 1973	8. 9943*n*	8. 9227	9. 1081	9. 7603*n*	9. 9400	8. 6990	—0. 042
13	13. 4270	9. 7862*n*	0. 1322*n*	9. 8044*n*	9. 9139	8. 6484	9. 2846*n*	9. 8692	—0. 345
		7. 7967	9. 0109*n*	8. 8753	9. 1103	9. 7069*n*	9. 9595	9. 1139	+0. 066
16	16. 4328	9. 8888*n*	0. 1988*n*	9. 8183*n*	9. 8133	8. 3539	9. 3597*n*	0. 1461	—0. 335
		8. 3510*n*	9. 0839*n*	8. 7335	9. 1018	9. 4610*n*	9. 9992	9. 4472*n*	—0. 268
17	17. 4261	9. 9130*n*	0. 2185*n*	9. 8070*n*	9. 7685	8. 1785	9. 3772*n*	0. 3522	+0. 313
		8. 5000*n*	9. 1119*n*	8. 6951	9. 0939	9. 3282*n*	0. 0067	9. 1139*n*	—0. 095
19	19. 4508	9. 9507*n*	0. 2529*n*	9. 7571*n*	9. 6508	6. 5746*n*	9. 4030*n*	0. 3729	+0. 042
		8. 6941*n*	9. 1678*n*	8. 6495	9. 0695	8. 7403*n*	0. 0137	9. 7924*n*	—0. 539
20	20. 4258	9. 9640*n*	0. 2663*n*	9. 7188*n*	9. 5760	7. 8924*n*	9. 4113*n*	0. 4216	+0. 219
		8. 7600*n*	9. 1931*n*	8. 6460	9. 0535	8. 3303	0. 0132	9. 5441	+0. 452
Dec. 7	7. 4632	9. 7645*n*	0. 1407*n*	9. 5710	9. 8998*n*	8. 9862*n*	9. 1060*n*	0. 5416	+0. 626
		0. 0768*n*	9. 2561*n*	9. 2155	8. 3926*n*	9. 9855	9. 3959	9. 5563	+0. 642
9	9. 4361	9. 6601*n*	0. 0932*n*	9. 5138	9. 9403*n*	8. 9934*n*	8. 9641*n*	0. 5145	+0. 635
		9. 0589*n*	9. 2125*n*	9. 2364	8. 6303*n*	9. 9953	9. 0016	8. 8451*n*	+0. 203
10	10. 4039	9. 5934*n*	0. 0705*n*	9. 4605	9. 9553*n*	8. 9934*n*	8. 8693*n*	0. 4014	+0. 025
		9. 0462*n*	9. 1873*n*	9. 2400	8. 7093*n*	9. 9965	8. 4298	8. 4771*n*	+0. 235
12	12. 4167	9. 3974*n*	0. 0280*n*	9. 2629	9. 9775*n*	8. 9857*n*	8. 5489*n*	0. 4133	+0. 337
		9. 0102*n*	9. 1290*n*	9. 2386	8. 8324*n*	9. 9911	9. 0974*n*	8. 7782	+0. 308
13	13. 4090	9. 2473*n*	0. 0113*n*	9. 0792	9. 9842*n*	8. 9779*n*	8. 2051*n*	0. 2430	—0. 370
		8. 9871*n*	9. 0983*n*	9. 2323	8. 8791*n*	9. 9843	9. 2982*n*	8. 8451	+0. 299
14	14. 4211	9. 0042*n*	9. 9982*n*	8. 6993	9. 9883*n*	8. 9669*n*	7. 5749	0. 2625	—0. 149
		8. 9591*n*	9. 0666*n*	9. 2222	8. 9198*n*	9. 9746	9. 4351*n*	9. 3617	+0. 444
15	15. 4169	8. 4100*n*	9. 9901*n*	8. 3522*n*	9. 9897*n*	8. 9533*n*	8. 3645	0. 2833	+0. 077
		8. 9269*n*	9. 0360*n*	9. 2085	8. 9541*n*	9. 9622	9. 5351*n*	9. 5563*n*	—0. 166
19	19. 4211	9. 4417	0. 0093*n*	9. 4987*n*	9. 9683*n*	8. 8626*n*	8. 9915	0. 0828	—0. 087
		8. 7249*n*	8. 9445*n*	9. 1154	9. 0488*n*	9. 8784	9. 7768*n*	9. 2553*n*	—0. 079

Equations of Condition—Continued.

ANGLE OF POSITION AND DISTANCE.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1875.									″
June 30	. . .	0.0017*n*	0.2627*n*	9.9705*n*	9.2016	7.5735*n*	9.3343*n*	0.5105	—0.284
	30.7557	8.6194	8.8638	8.6342	. . .	8.7873	0.0257*n*	9.6335	+0.874
Aug. 5	. . .	9.9820*n*	0.2001	0.0610	9.6943	7.9707	9.2571*n*	9.9777*n*	—0.221
	5.6735	8.6183	8.7143*n*	8.8042*n*	. . .	9.6349	9.9694*n*	0.0086	+1.753
8	. . .	0.0311*n*	0.2628	0.0293	9.3928	7.9715	9.3964*n*	9.9345*n*	—0.136
	8.6658	8.9588	9.1537*n*	9.0336*n*	. . .	9.2832	0.0076*n*	9.0414	+0.553
Sept. 14	. . .	9.9871*n*	0.2065*n*	0.0823*n*	9.5568	8.4443	9.4253*n*	0.2967	—0.615
	14.5381	9.0328	9.1741	9.2043	. . .	9.5388	0.0019*n*	9.1461	+1.032
16	. . .	9.9989*n*	0.2358*n*	0.0429*n*	9.3043	8.4578	9.5669*n*	0.4200	—0.445
	16.5327	9.2908	9.4949	9.3907	. . .	9.2701	0.0075*n*	— ∞	+1.040
19	. . .	9.9034	0.1623	9.8732	8.7915	8.4658*n*	9.7359*n*	0.5378*n*	—0.308
	19.5104	9.8119	0.0786	9.7491	. . .	8.6656	9.9798	0.4393*n*	—0.411
20	. . .	9.9916	0.2619	9.9175	9.1493	8.5145*n*	9.1099*n*	0.5999*n*	—0.013
	20.5720	9.4567	9.7387	9.3097	. . .	9.1357	0.0349	0.3032*n*	—0.918
Oct. 25	. . .	9.9896*n*	0.1981	0.0514	9.4707	8.5243	9.4340*n*	9.4314*n*	+0.246
	25.4282	9.1400	9.2876*n*	9.2798*n*	. . .	9.4789	9.9571*n*	9.3617*n*	+0.376
27	. . .	9.9895*n*	0.2171	9.9930	9.1408	8.5413	9.6273*n*	9.7482*n*	+0.030
	27.4415	9.4661	9.6723*n*	9.5188*n*	. .	9.1410	9.9452*n*	8.6021	+0.368
29	. . .	9.7922	0.0311*n*	9.7575*n*	8.6910	8.1064*n*	9.8300*n*	9.3222	+0.126
	29.4504	9.9116	0.1590*n*	9.8406*n*	. . .	8.2286	9.6652*n*	9.3010*n*	—0.537
Dec. 2	. . .	9.9297*n*	0.1450*n*	0.0358*n*	9.5480	8.3603	9.3415*n*	0.4031	+0.340
	2.3848	8.9154	9.0380	9.1014	. . .	9.5317	9.9453*n*	9.4624	+1.073
1876.									
July 15	. . .	8.1893	0.0163*n*	9.3276*n*	0.0225	6.8977*n*	7.3552*n*	9.2553	—0.009
	15.8081	8.7460*n*	8.3345	9.0369*n*	. . .	0.0013	9.5123*n*	0.1523*n*	—0.153
16	. . .	8.8479*n*	0.0124*n*	9.4755*n*	0.0222	7.7438*n*	8.1593*n*	9.9294	+0.607
	16.8160	8.7451*n*	8.1035	9.0423*n*	. . .	9.9902	9.6090*n*	0.5065*n*	—1.968
18	. . .	9.3741*n*	0.0214*n*	9.6696*n*	0.0133	8.1400*n*	8.5592*n*	9.9542	+0.468
	18.8016	8.7514*n*	7.6889*n*	9.0526*n*	. . .	9.9588	9.7475*n*	0.3820*n*	—1.242
21	. . .	7.6739*n*	0.0700*n*	9.8370*n*	9.9776	8.3744*n*	8.7937*n*	0.0492	+0.193
	21.7926	8.7824*n*	8.5257*n*	9.0690*n*	. . .	9.8833	9.8829*n*	0.1004*n*	—0.265
26	. . .	9.8999*n*	0.1893*n*	9.9332*n*	9.8433	8.4841*n*	8.8901*n*	0.3655	+0.116
	26.7903	8.9069*n*	9.0063*n*	9.1089*n*	. . .	9.6341	0.0060*n*	9.9590*n*	—0.380
Aug. 5	. . .	9.9434	0.2465	9.5323	8.9636	9.3182	9.8592	0.6064*n*	+0.101
	5.7108	9.7590*n*	0.0653*n*	9.2177*n*	. . .	9.4888	9.8923	0.3945	+0.030
14	. . .	9.8807	0.2363	9.2517*n*	9.8841	8.6650	9.1983	0.6405*n*	+0.700
	14.7265	8.8048*n*	9.0458*n*	8.8312	. . .	9.9757	9.7604	9.6128	+1.046
20	. . .	9.5447	0.1002	8.9074*n*	0.0161	8.2605	8.8121	0.5428*n*	+0.424
	20.6650	8.6468*n*	8.6801*n*	8.8800	. . .	0.0413	9.0325	0.2253*n*	—0.640
21	. . .	9.4251	0.0774	8.3002*n*	0.0269	8.1374	8.6939	0.6149*n*	—0.463
	21.7084	8.6309*n*	8.6025*n*	8.8838	. . .	0.0428	8.2885	9.7559*n*	+0.508
22	. . .	9.2718	0.0588	8.6497	0.0339	7.9892	8.5512	0.6314*n*	—0.863

Equations of Condition—Continued.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1876.									″
Aug. 22	22.6636	8.6194*n*	8.5226*n*	8.8869	. . .	0.0417	8.7906*n*	0.2175*n*	—0.546
26	. . .	9.1933*n*	0.0224	9.5737	0.0359	7.7005*n*	8.2727*n*	0.4669*n*	—0.476
	26.6541	8.5971*n*	7.8780*n*	8.8973	. . .	0.0095	9.5942*n*	0.1931*n*	—0.433
27	. . .	9.3847*n*	0.0266	9.6654	0.0293	7.9100*n*	8.4935*n*	0.3324*n*	+0.090
	27.6558	8.5982*n*	7.1601*n*	8.8995	. . .	9.9940	9.6733*n*	9.9395*n*	+0.241
28	. . .	9.5164*n*	0.0361	9.7697	0.0198	8.0531*n*	8.6316*n*	0.3962*n*	—0.449
	28.6615	8.6027*n*	7.7050	8.9024	. . .	9.9749	9.7381*n*	0.0531*n*	—0.043
31	. . .	9.7562*n*	0.0903	9.8866	9.9722	8.2634*n*	8.8612*n*	0.1139*n*	+0.273
	31.6340	8.6331*n*	8.4009	8.9117	. . .	9.8944	9.8746*n*	0.2068*n*	—0.638
Sept. 26	. .	9.6904	0.1304*n*	8.7569	9.9780	8.1600	8.8818	8.6021*n*	—0.327
	26.5354	8.4694*n*	8.5863	8.6373*n*	. . .	0.0105	9.3744	0.1875*n*	—0.353
28	. . .	9.5086	0.0777*n*	8.6032*n*	0.0062	7.9470	8.6747	9.9494	+0.743
	28.5384	8.4285*n*	8.4530	8.6514*n*	. . .	0.0220	8.8221	0.2810*n*	—0.666
29	. . .	9.3721	0.0538*n*	9.0231*n*	0.0153	7.7766	8.5167	0.0086	+0.919
	29.5467	8.4128*n*	8.3755	8.6567*n*	. . .	0.0234	8.3078*n*	0.0492*n*	+0.141
Oct. 2	. . .	8.3626*n*	0.0061*n*	9.5312*n*	0.0246	7.1415*n*	7.9225*n*	9.5911	+0.290
	2.5153	8.3861*n*	8.0709	8.6714*n*	. . .	0.0105	0.4339*n*	0.3404*n*	—0.927
3	. . .	9.0404*n*	0.0004*n*	9.6300*n*	0.0220	7.5582*n*	8.3372*n*	9.1461	—0.011
	3.5312	8.3812*n*	7.8947	8.6755*n*	. . .	0.0003	9.5495*n*	0.0170*n*	+0.207
9	. . .	9.7610*n*	0.0756*n*	9.9394*n*	9.9426	8.1579*n*	8.9465*n*	0.2068	+0.571
	9.5368	8.4276*n*	8.2141*n*	8.7108*n*	. . .	9.8664	9.8908*n*	0.4409*n*	—1.770
11	. . .	9.8467*n*	0.1237*n*	9.9766*n*	9.8871	8.2164*n*	9.0146*n*	0.2148	+0.115
	11.5447	8.4739*n*	8.4336*n*	8.7300*n*	. . .	9.7836	9.9466*n*	0.0969*n*	—0.405
13	. . .	9.9076*n*	0.1712*n*	9.9893*n*	9.8120	8.2408*n*	9.0544*n*	0.1703	—0.584
	13.5367	8.5380*n*	8.6105*n*	8.7551*n*	. . .	9.6691	9.9860*n*	8.7782	+0.733
16	. . .	9.9662*n*	0.2320*n*	9.9664*n*	9.6450	8.2140*n*	9.0537*n*	0.4216	—0.259
	16.4803	8.6938*n*	8.8780*n*	8.8215*n*	. . .	9.3824	0.0216*n*	0.1173	+1.668
18	. . .	9.9891*n*	0.2630*n*	9.9207*n*	9.4579	8.0688*n*	8.9673*n*	0.4969	—0.304
	18.4965	8.8712*n*	9.1066*n*	8.9098*n*	. . .	8.9021	0.0327*n*	9.7709	+0.656
21	. . .	9.9677*n*	0.2570*n*	9.7638*n*	8.7175	8.7519	9.4084	0.5682	—0.119
	21.4763	9.6005*n*	9.8855*n*	9.4307*n*	. . .	9.1701*n*	0.0174*n*	0.3304	+0.548
24	. . .	9.9931	0.2967	9.6055	9.2864	8.6643	9.4349	0.7135*n*	—0.533
	24.4792	9.0224*n*	9.3305*n*	8.3657*n*	. . .	9.5866	9.9864	9.3802	—0.011
27	. . .	9.9618	0.2812	9.2419	9.6266	8.5004	9.2930	0.7152*n*	—0.305
	27.5208	8.6731*n*	8.9802*n*	8.0781	. . .	9.7770	9.9376	0.0253*n*	—0.790
31	. . .	9.8753	0.2250	8.5266*n*	9.8347	8.3573	9.1609	0.7152*n*	—0.450
	31.4744	8.4584*n*	8.7269*n*	8.3844	. . .	9.9143	9.8139	9.9590*n*	—0.250
Nov. 1	. . .	9.8428	0.2051	8.7945*n*	9.8697	8.3164	9.1217	0.6365*n*	+0.297
	1.4931	8.4216*n*	8.6727*n*	8.4153	. . .	9.9377	9.7676	9.1139*n*	+0.609
10	. . .	8.9217	0.0022	9.2574	0.0051	7.4458	8.2622	0.4669*n*	—0.103
	10.4174	8.2832*n*	8.1555*n*	8.5566	. . .	0.0062	8.9248*n*	9.9138*n*	+0.289
12	. . .	8.8717*n*	9.9796	9.5170	0.0038	7.0524*n*	7.8646*n*	0.4502*n*	—0.450
	12.4063	8.2862*n*	7.9222*n*	8.5791	. . .	9.9917	9.3813*n*	9.6532*n*	+0.661
22	. . .	9.8834*n*	0.1350	9.9491	9.8091	8.2003*n*	8.9927*n*	0.1430*n*	—0.356

Equations of Condition—Continued.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1876.									″
Nov. 22	22.4190	8.5000*n*	8.5336	8.7190	. . .	9.6919	9.9247*n*	9.9912*n*	—0.270
24	. . .	9.9340*n*	0.1821	9.9458	9.7103	8.2182*n*	9.0088*n*	0.2330*n*	—0.728
	24.4387	8.6048*n*	8.7293	8.7673	. . .	9.5371	9.9565*n*	9.7076*n*	+0.055
29	. . .	9.9914*n*	0.2582	9.8139	9.1636	6.9857	8.1205*n*	0.0000*n*	+0.004
	29.4081	9.1687*n*	9.4211	9.0746	. . .	8.6481*n*	9.9821*n*	9.3979*n*	—0.005
Dec. 1	. . .	9.7502	0.0249*n*	9.4853*n*	8.4238	9.2327	9.9283	8.4771*n*	—0.540
	1.4417	9.9170*n*	0.1944	9.5658	. . .	9.0406	9.5932	0.0043*n*	—0.062
5	. . .	9.9702	0.2658*n*	9.3042*n*	9.4997	8.5841	9.2959	9.7709	—0.345
	5.3860	8.8562*n*	9.1470	7.9814*n*	. . .	9.6872	9.8956	8.4771*n*	+0.486
19	. . .	9.0019	9.9733*n*	9.2402*n*	9.9690	7.4023	8.0622	8.3010*n*	—0.097
	19.4266	8.4548*n*	8.2991	8.7238*n*	. . .	9.9658	9.1328*n*	9.6232*n*	+0.709
21	. . .	8.1409*n*	9.9552*n*	9.4461*n*	9.9707	7.1758*n*	7.7967*n*	0.1106	+1.185
	21.3963	8.4629*n*	8.0956	8.7512*n*	. . .	9.9554	9.3969*n*	9.7709*n*	+0.528
July 24	. . .	9.8339*n*	0.1424*n*	9.9175*n*	9.9088	8.4715*n*	8.8866*n*	9.1139	—1.529
	24.7869	8.8451*n*	8.8450*n*	9.0901*n*	. . .	9.7568	9.9697*n*	0.1399*n*	—0.642
1877.									
June 22	. . .	9.8334	0.1471	8.6112*n*	9.2259	9.6340	9.8532	0.5855*n*	+0.069
	22.7909	9.8452*n*	0.1512*n*	9.3172	. . .	9.6252	9.6762	0.5465	+0.351
23	23.7943	9.7127*n*	0.0124*n*	9.3661	. . .	9.7539	9.7735	0.4031	+0.397
25	. . .	9.9411	0.2538	9.5100*n*	9.5623	9.3925	9.5625	0.7118*n*	+0.035
	25.7809	9.5131*n*	9.7920*n*	9.3860	. . .	9.8675	9.7778	0.1271	+0.353
Oct. 13	. . .	0.0102*n*	0.2989	9.5919	9.5032	8.4024	9.0467	0.2672*n*	—0.201
	13.5441	9.4772*n*	9.7411	9.3123	. . .	9.0701*n*	0.0220*n*	9.7782*n*	—0.271
14	. . .	0.0055*n*	0.2950	9.4829	9.3780	8.8177	9.3081	0.2253*n*	—0.040
	14.5170	9.6001*n*	9.8750	9.3286	. . .	9.2864*n*	0.0097*n*	0.0645*n*	—0.767
15	. . .	9.9707*n*	0.2614	9.2860	9.2095	9.1589	9.5794	0.1959*n*	+0.009
	15.4913	9.7665*n*	0.0497	9.3491	. . .	9.3943*n*	9.9764*n*	0.0969*n*	—0.642
16	. . .	9.7435*n*	0.0366	8.3553	8.9910	9.5008	9.8796	9.5911*n*	+0.788
	16.4956	9.9828*n*	0.2715	9.3302	. . .	9.2816*n*	9.8045*n*	9.8751*n*	+0.471
17	. . .	9.6314	9.9209*n*	9.0931*n*	8.9619	9.6169	9.9695	9.4624	+0.122
	17.4573	0.0097*n*	0.3009	8.8451	. . .	9.2251	9.3192	9.7324*n*	+1.149
18	. . .	9.9555	0.2482*n*	8.8562*n*	9.1706	9.4767	9.8103	9.9294	—0.120
	18.4420	9.7989*n*	0.0900	8.7523*n*	. . .	9.6312	9.8103	0.0212*n*	+0.337
Nov. 27	. . .	9.9298	0.2425	8.6959	9.2422	9.4118	9.7505	0.6590*n*	—0.054
	27.4459	9.6680*n*	9.9778*n*	8.8143	. . .	9.6744	9.8461	0.3945	+0.559
1878.									
Jan. 3	. . .	9.8558*n*	0.1482	8.9021	9.0930	9.2889	9.6748	9.8451*n*	+0.635
	3.4188	9.8191*n*	0.1060	9.2784	. . .	9.3490*n*	9.8731*n*	9.9191*n*	—0.078
4	. . .	9.2449*n*	9.5425	8.8159*n*	8.9303	9.5573	9.9027	8.7782	+0.748
	4.4247	9.9829*n*	0.2736	9.0868	. . .	8.8574*n*	9.4770*n*	0.0755*n*	+0.187
5	. . .	9.7472	0.0392*n*	8.9466*n*	9.0117	9.5542	9.8707	9.5911	—0.031
	5.4117	9.9021*n*	0.1934	8.4038*n*	. . .	9.3932	9.5353	9.1461*n*	+1.341
1878.									
Sept. 27	. . .	9.6592*n*	0.1369*n*	9.2710*n*	0.0084	8.5859*n*	7.8315*n*	0.2279	+0.216

Equations of Condition—Continued.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1878.									″
Sept. 27	27. 5654	9. 2540*n*	9. 3286*n*	9. 4695*n*	. . .	9. 6847	0. 0173*n*	9. 2553*n*	+0. 353
28	. . .	9. 7243*n*	0. 1600*n*	9. 3406*n*	9. 9910	8. 5934*n*	7. 0854*n*	0. 2878	+0. 134
	28. 5688	9. 2702*n*	9. 3888*n*	9. 4598*n*	. . .	9. 6077	0. 0320*n*	0. 3054*n*	—1. 564
Oct. 1	. . .	9. 8600*n*	0. 2252*n*	9. 3757*n*	9. 9170	8. 4335*n*	8. 4865	0. 3945	—0. 402
	1. 5729	9. 3421*n*	9. 5551*n*	9. 4239*n*	. . .	9. 1988	0. 0588*n*	0. 0453*n*	—0. 986
Nov. 2	. . .	9. 1513*n*	0. 0438	8. 6820*n*	0. 0299	8. 0776*n*	7. 8916*n*	0. 3802*n*	+0. 609
	2. 4935	9. 1780*n*	8. 8934	9. 4613	. . .	9. 9029	9. 8629*n*	9. 5798*n*	—0. 006
4	. . .	9. 4942*n*	0. 0766	8. 9974	0. 0135	8. 4284*n*	8. 1573*n*	0. 3979*n*	+0. 010
	4. 5014	9. 1909*n*	9. 1039	9. 4476	. . .	9. 8261	9. 9262*n*	9. 5682*n*	+0. 108
13	. . .	9. 9552*n*	0. 2654	9. 2513	9. 7478	7. 8824	8. 9139	0. 3139*n*	—0. 902
	13. 5097	9. 4416*n*	9. 6957	9. 3375	. . .	8. 7717*n*	0. 0202*n*	9. 8751	+1. 387
15	. . .	9. 9771*n*	0. 2790	8. 7019	9. 6167	8. 8136	9. 2251	0. 3118*n*	—1. 062
	15. 4617	9. 5697*n*	9. 8474	9. 2597	. . .	9. 3332*n*	0. 0032*n*	9. 5185	+0. 979
18	. . .	9. 8699*n*	0. 1614	9. 2850*n*	9. 2840	9. 5224	9. 7283	0. 1399*n*	—0. 828
	18. 5356	9. 8976*n*	0. 1891	7. 8002	. . .	9. 5213*n*	9. 8763*n*	9. 4914*n*	+0. 488
Dec. 6	. . .	9. 4013	0. 0216*n*	9. 5435	0. 0000	8. 4795	8. 3841	9. 3424*n*	+0. 012
	6. 4690	9. 1589*n*	8. 5138	9. 4561*n*	. . .	9. 9725	9. 6094*n*	0. 3345*n*	—1. 472
7	. . .	9. 2431	0. 0118*n*	9. 4405	0. 0064	8. 2733	8. 1641	9. 6628*n*	—0. 288
	7. 4428	9. 1515*n*	8. 0096	9. 4520*n*	. . .	9. 9577	9. 6798*n*	9. 7404*n*	+0. 150
16	. . .	9. 6899*n*	0. 1168*n*	9. 4201*n*	9. 9445	8. 5709*n*	7. 8200*n*	0. 2455	+0. 156
	16. 4486	9. 2053*n*	9. 3049*n*	9. 4070*n*	. . .	9. 6014	9. 9824*n*	0. 0128*n*	—0. 569
23	. . .	9. 9067*n*	0. 2353*n*	9. 1217*n*	9. 7023	8. 4183	9. 0539	0. 6064	+0. 256
	23. 4356	9. 4422*n*	9. 7229*n*	9. 3045*n*	. . .	9. 0874*n*	0. 0102*n*	9. 9777	+0. 398
27	. . .	9. 8789*n*	0. 1927*n*	9. 1687	9. 3880	9. 3687	9. 6017	0. 5752	—0. 459
	27. 4412	9. 7521*n*	0. 0620*n*	8. 8272*n*	. . .	9. 5346*n*	9. 9303*n*	0. 4378	+0. 166
30	. . .	9. 1575	9. 4972	8. 9536	9. 1640	9. 7766	9. 9132	9. 9445*n*	—0. 287
	30. 4148	9. 9764*n*	0. 2808*n*	9. 5127	. . .	8. 9391	8. 6034*n*	0. 7093	—0. 374
1879.									
Oct. 7	. . .	9. 6160	9. 9173*n*	9. 1904	9. 3646	9. 9174	9. 8045	9. 4150*n*	—0. 410
	7. 6276	0. 0349*n*	0. 2769	9. 9858*n*	. . .	9. 5057	8. 7762	0. 0828*n*	—0. 026
Nov. 12	. . .	9. 8663*n*	0. 1555*n*	9. 7275	9. 5037	9. 6525	9. 6954	0. 6405	+0. 156
	12. 5390	9. 8776*n*	0. 1825*n*	9. 3973	. . .	9. 6813*n*	9. 8934*n*	0. 5843	—0. 184
13	. . .	9. 7953*n*	0. 0736*n*	9. 7280	9. 4271	9. 7512	9. 7556	0. 5944	+0. 277
	13. 4479	9. 9337*n*	0. 2332*n*	9. 5891	. . .	9. 6446*n*	9. 8247*n*	0. 6232	—0. 574
14	. . .	9. 5333*n*	9. 7768*n*	9. 6189	9. 3542	9. 8647	9. 8398	0. 3345	+0. 128
	14. 4795	0. 0055*n*	0. 2957*n*	9. 7892	. . .	9. 4195*n*	9. 6399*n*	0. 7672	—0. 032
15	. . .	8. 8999	9. 3636	9. 1161	9. 3300	9. 9216	9. 8692	9. 8261*n*	—0. 135
	15. 5428	0. 0279*n*	0. 3053*n*	9. 9109	. . .	8. 7754	9. 1001*n*	0. 7896	—0. 217
16	. . .	9. 6251	9. 9426	9. 2464*n*	9. 3666	9. 9070	9. 8328	0. 4099*n*	+0. 154
	16. 4683	9. 9899*n*	0. 2534*n*	9. 9420	. . .	9. 5551	9. 0324	0. 7574	—0. 202
1880.									
Nov. 7	. . .	9. 6538*n*	9. 8090	9. 8307*n*	9. 4488	9. 9110	9. 6728	0. 0682*n*	—0. 247
	7. 5536	0. 0286*n*	0. 2656	9. 9984*n*	. . .	9. 5776*n*	9. 6144*n*	9. 8325*n*	+0. 561
8	. . .	9. 0511*n*	8. 6560	9. 5389*n*	9. 4126	9. 9716	9. 6994	9. 9294*n*	—0. 314
	8. 5088	0. 0639*n*	0. 2813	0. 0915*n*	. . .	9. 0274*n*	9. 3709*n*	9. 9085*n*	+0. 519

Equations of Condition—Continued.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1880.									″
Nov. 9	. . .	9.4682	9.7920*n*	9.1278	9.4250	9.9787	9.6699	9.4624*n*	—0.165
	9.5546	0.0505*n*	0.2420	0.1113*n*	. . .	9.4036	8.7731*n*	0.0864*n*	+0.081
Dec. 16	. .	9.7927*n*	0.0153*n*	9.8954	9.5118	9.8069	9.6356	0.6149	+0.686
	16.4687	9.9202*n*	0.1937*n*	9.8248	. . .	9.7224*n*	9.7629*n*	0.7126	+0.298
17	. . .	9.6349*n*	9.8125*n*	9.8114	9.4508	9.8965	9.6922	0.4425	+0.477
	17.4611	9.9798*n*	0.2373*n*	9.9540	. . .	9.5852*n*	9.6385*n*	0.7731	+0.239
18	. . .	9.1969*n*	9.1313*n*	9.5798	9.4122	9.9575	9.7212	0.0864	+0.634
	18.4472	0.0168*n*	0.2553*n*	0.0483	. . .	9.1706*n*	9.4222*n*	0.8306	+0.515
19	. . .	9.1730	9.5996	8.3296	9.4112	9.9746	9.7086	9.6021	+1.758
	19.3936	0.0166*n*	0.2334*n*	0.0949	. . .	9.1476	9.0086*n*	0.7810	—0.204
1881.									
Sept. 23	. . .	9.7835*n*	9.8192	0.0298*n*	9.5526	9.9070	9.3064	0.0969*n*	+0.008
	23.6692	9.9800*n*	0.1486	0.0948*n*	. . .	9.7697*n*	9.5604*n*	9.7076*n*	+0.468
24	. . .	9.5921*n*	9.4856	9.8953*n*	9.5012	9.9786	9.3061	0.0453*n*	—0.121
	24.6610	0.0323*n*	0.1678	0.1843*n*	. . .	9.5913*n*	9.4393*n*	9.9191*n*	+0.232
26	. . .	9.3678	9.7093*n*	9.2903	9.4826	9.0191	9.1703	9.8633*n*	—0.714
	26.6459	0.0527*n*	0.1037	0.2634*n*	. . .	9.3405	9.1864*n*	9.2041*n*	+0.933
1883.									
Oct. 15	. . .	9.8106*n*	9.7977*n*	0.1630	9.9697	9.3035	8.2024	0.4914	+0.326
	15.7133	9.5757*n*	9.8144*n*	9.6064	. . .	9.9745*n*	9.8031*n*	8.9031	—0.417
16	. . .	9.8462*n*	9.8007*n*	0.1830	9.9443	9.3861	7.9064	0.4594	—0.068
	16.7207	9.6022*n*	9.8180*n*	9.6824	. . .	9.9893*n*	9.7501*n*	9.9395	+0.251
24	. . .	9.7998*n*	8.5625*n*	0.1182	9.5864	9.9481	9.3579*n*	0.3802	—0.215
	24.6756	9.9706*n*	9.7751*n*	0.2519	. . .	9.8255*n*	8.7950*n*	0.5647	+0.661
29	. . .	9.7939	9.4662	0.1077*n*	9.5854	9.8877	9.5441*n*	0.4133*n*	—0.551
	29.6795	9.9770*n*	9.1371	0.2764	. . .	9.7566	9.6937*n*	0.4886	—0.154
30	. . .	9.8713	9.3231	0.1897*n*	9.6436	9.7991	9.4995*n*	0.3579*n*	+0.222
	30.6654	9.9198*n*	9.3966	0.2145	. . .	9.8192	9.7783*n*	0.4298	—0.064
31	. . .	9.9084	9.0772	0.2310*n*	9.7021	9.7024	9.4478*n*	0.4456*n*	—0.027
	31.6637	9.8625*n*	9.5202	0.1497	. . .	9.8404	9.8412*n*	0.3962	+0.182
Nov. 1	. . .	9.9228	8.5103	0.2500*n*	9.7563	9.6022	9.3938*n*	0.4200*n*	+0.255
	1.6617	9.8092*n*	9.5921	0.0861	. . .	9.8374	9.8898*n*	0.3424	+0.284
3	. . .	9.9130	9.0396*n*	0.2528*n*	9.8485	9.3895	9.2808*n*	0.3032*n*	+0.880
	3.6483	9.7189*n*	9.6716	9.9657	. . .	9.7867	9.9600*n*	0.3464	+0.939
4	. . .	9.8954	9.2004*n*	0.2440*n*	9.8859	9.2766	9.2231*n*	0.4378*n*	+0.087
	4.6184	9.6822*n*	9.6954	9.9096	. . .	9.7441	9.9853*n*	9.8388*n*	—1.715
5	. . .	9.8690	9.2880*n*	0.2300*n*	9.9206	9.1462	9.1585*n*	0.4265*n*	+0.066
	5.6456	9.6483*n*	9.7148	9.8508	. . .	9.6853	0.0073*n*	9.7160	—0.260
27	. . .	9.9332*n*	9.8042	0.2329*n*	9.7976	9.6751	8.5009*n*	0.3997*n*	—0.487
	27.5775	9.7823*n*	9.8941	9.9549*n*	. . .	9.9912*n*	9.4911*n*	0.5763*n*	—1.550
29	. . .	9.9101*n*	9.6295	0.2157*n*	9.6895	9.8319	8.9850*n*	0.3962*n*	- 0.872
	29.6085	9.8909*n*	9.9060	0.1173*n*	. . .	9.9480*n*	9.2227*n*	0.3579*n*	+0.253
30	. . .	9.8644*n*	9.4460	0.1764*n*	9.6320	9.9029	9.1512*n*	0.1367*n*	—0.096
	30.5776	9.9485*n*	9.9037	0.1947*n*	. . .	9.8943*n*	9.0727*n*	0.3404*n*	+0.502
Dec. 1	. . .	9.7640*n*	8.9724	0.0870*n*	9.5737	9.9695	9.2983*n*	9.8692*n*	+0.026
	1.5873	0.0067*n*	9.8861	0.2700*n*	. . .	9.7878*n*	8.9741*n*	0.4183*n*	+0.209

Equations of Condition—Continued.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1883.									″
Dec. 2	. . .	9.5238*n*	9.0736*n*	9.8732*n*	9.5260	0.0194	9.4192*n*	9.5051*n*	—0.251
	2.6294	0.0546*n*	9.8347	0.3319*n*	. . .	9.5474*n*	9.0540*n*	0.4871*n*	—0.210
3	. . .	8.5167*n*	9.4740*n*	9.1730*n*	9.5067	0.0351	9.4934*n*	0.0212	+0.386
	3.6040	0.0741*n*	9.7312	0.3614*n*	. . .	8.6879*n*	9.2533*n*	0.4594*n*	—0.183
5	. . .	9.7342	9.6438*n*	0.0178	9.5638	9.9522	9.5177*n*	0.0682	—0.598
	5.6311	0.0169*n*	9.1540	0.3163*n*	. . .	9.6984	9.6068*n*	0.0453*n*	+0.734
6	. . .	9.8471	9.6075*n*	0.1445	9.6182	9.8770	9.4895*n*	0.3444	+0.239
	6.5958	9.9624*n*	8.1545*n*	0.2637*n*	. . .	9.8056	9.7096*n*	0.1818*n*	—0.116
9	. . .	9.9362	9.2490*n*	0.2578	9.7853	9.6060	9.3589*n*	0.1461	—0.516
	9.5711	9.7951*n*	9.4788*n*	0.0857*n*	. . .	9.8648	9.8943*n*	9.6902	+1.094
10	. . .	9.9324	9.0118*n*	0.2617	9.8324	9.5082	9.3101*n*	0.1303	—0.457
	10.5806	9.7478*n*	9.5517*n*	0.0292*n*	. . .	9.8475	9.9338*n*	9.7404	+1.004
17	. . .	9.7033	8.8478	0.1609	0.0302	8.5846	8.8928*n*	9.5563	—0.782
	17.4794	9.5487*n*	9.7355*n*	9.6730*n*	. . .	9.3857	0.0696*n*	9.8865*n*	—0.683
17	. . .	9.6971	8.8337	0.1589	0.0318	8.5628	8.8844*n*	0.0334	—0.058
	17.5784	9.5469*n*	9.7367*n*	9.6675*n*	. . .	9.3707	0.0704*n*	0.2405*n*	—1.655
18	. . .	9.6327	8.6200	0.1390	0.0454	8.3267	8.8018*n*	9.7782	—0.511
	18.5093	9.5329*n*	9.7478*n*	9.6148*n*	. . .	9.1944	0.0764*n*	9.7782*n*	—0.527
21	. . .	9.2806	9.0325*n*	0.0813	0.0734	7.5776*n*	8.3826*n*	9.8751	—0.415
	21.5384	9.5038*n*	9.7777*n*	9.4062*n*	. . .	9.0189*n*	0.0803*n*	9.8062*n*	—0.602
27	. . .	9.4686*n*	9.7281*n*	0.0606	0.0617	8.6640	8.4735	0.2765	+0.012
	27.5436	9.5122*n*	9.8222*n*	8.5776	. . .	9.7703*n*	0.0170*n*	9.7924*n*	—0.734
28	. . .	9.5687*n*	9.7779*n*	0.0723	0.0511	8.8256	8.5435	0.3522	+0.195
	28.5516	9.5222*n*	9.8289*n*	8.9586	. . .	9.8192*n*	9.9962*n*	0.0453*n*	—1.274
29	. . .	9.6444*n*	9.8165*n*	0.0866	0.0383	8.9569	8.5887	0.3997	+0.277
	29.5210	9.5344*n*	9.8355*n*	9.1604	. . .	9.8587*n*	9.9726*n*	0.2227	+1.448
1884.									
Jan. 2	. . .	9.8399*n*	9.8913*n*	0.1618	9.9551	9.3638	8.5823	0.5809	+0.838
	2.5604	9.6145*n*	9.8631*n*	9.6183	. . .	9.9650*n*	9.8299*n*	9.3802*n*	—0.846
5	. . .	9.9056*n*	9.8555*n*	0.2076	9.8582	9.5916	8.1636	0.4771	—0.363
	5.4850	9.7088*n*	9.8845*n*	9.8469	. . .	9.9920*n*	9.6597*n*	9.9868	—0.141
6	. . .	9.9146*n*	9.8187*n*	0.2157	9.8162	9.6646	6.7996*n*	0.5302	—0.037
	6.4904	9.7499*n*	9.8916*n*	9.9216	. . .	9.9898*n*	9.5801*n*	0.2742	+0.522
17	. . .	9.8779	9.4858	0.1953*n*	9.6797	9.7572	9.3808*n*	0.4698*n*	—0.302
	17.4995	9.8743*n*	9.2200	0.1717	. . .	9.8488	9.7623*n*	0.5366	+0.830
20	. . .	9.8949	8.9300	0.2344*n*	9.8226	9.4684	9.2479*n*	0.4548*n*	+0.043
	20.4975	9.7275*n*	9.5615	9.9981	. . .	9.8275	9.9021*n*	0.2380	+0.176
21	. . .	9.8786	8.4374	0.2279*n*	9.8609	9.3617	9.1976*n*	0.4624*n*	—0.056
	21.5117	9.6879*n*	9.6072	9.9431	. . .	9.7949	9.9336*n*	0.3820	+1.132
22	. . .	9.8557	8.1766*n*	0.2166*n*	9.8928	9.2536	9.1461*n*	0.3766*n*	+0.389
	22.4731	9.6547*n*	9.6395	9.8920	. . .	9.7543	9.9586*n*	0.2765	+0.846
23	. . .	9.8253	8.6500*n*	0.2014*n*	9.9210	9.1347	9.0908*n*	0.3979*n*	+0.175
	23.4473	9.6252*n*	9.6651	9.8409	. . .	9.7022	9.9795*n*	0.1761	+0.672
25	. . .	9.7348	8.7912*n*	0.1604*n*	9.9688	8.8314	8.9527*n*	0.3874*n*	+0.010
	25.5146	9.5745*n*	9.7054	9.7309	. . .	9.5440	c.0119*n*	9.2304	—0.252
26	. . .	9.6778	8.6828*n*	0.1390*n*	9.9858	8.6538	8.8782*n*	0.3304*n*	+0.208
	26.4718	9.5562*n*	9.7196	9.6776	. . .	9.4360	0.0218*n*	9.5441	+0.096

Equations of Condition—Continued.

Date.	G. M. T.	Log *a*	Log *b*	Log *c*	Log *d*	Log *e*	Log *f*	Log *v*	Residual.
1884.									″
Jan. 29	. . .	9.3735	8.8814	0.0706*n*	0.0210	7.3782	8.5217*n*	0.1931*n*	+0.508
	29.5483	9.5162*n*	9.7554	9.4780	. . .	8.0868	0.0346*n*	9.9731	+1.169
Feb. 1	. . .	7.7888*n*	9.4369	0.0276*n*	0.0294	6.0410*n*	6.3148*n*	0.2577*n*	+0.114
	1.4315	9.5036*n*	9.7817	9.1873	. . .	9.3684*n*	0.0208*n*	9.7634	+1.199
2	. . .	8.9653*n*	9.5467	0.0216*n*	0.0268	7.8422	7.9816	0.3075*n*	—0.126
	2.4495	9.5045*n*	9.7900	9.0132	. . .	9.5014*n*	0.0099*n*	9.8261*n*	+0.075
15	. . .	9.8801*n*	9.7360	0.1756*n*	9.6944	9.7368	8.4202*n*	0.2455*n*	—0.113
	15.4604	9.8165*n*	9.9053	0.0056*n*	. . .	9.9213*n*	9.3916*n*	0.2601*n*	+0.404
18	. . .	9.6812*n*	8.9526	0.0079*n*	9.5296	9.9400	9.1501*n*	0.0645*n*	—0.575
	18.4393	9.9767*n*	9.8941	0.2323*n*	. . .	9.7067*n*	9.0582*n*	0.4472*n*	—0.177
20	. . .	7.6537	9.4609*n*	8.9142*n*	9.4735	9.9932	9.3711*n*	9.5798	—0.297
	20.4344	0.0297*n*	9.7546	0.3122*n*	. . .	8.0143*n*	9.2330*n*	0.3560*n*	+0.187
21	. . .	9.4374	9.6081*n*	9.6685	9.4890	9.9677	9.4135*n*	0.1239	+0.083
	21.4451	0.0126*n*	9.5869	0.3041*n*	. . .	9.4060	9.3998*n*	0.3181*n*	+0.036
26	. . .	9.8831	9.3493*n*	0.2029	9.7395	9.5765	9.2953*n*	0.4133	+0.831
	26.4497	9.7546*n*	9.3701*n*	0.0484*n*	. .	9.8256	9.8282*n*	9.9494	+1.472
29	. . .	9.8482	8.6425*n*	0.1960	9.8582	9.2833	9.1630*n*	0.2810	+0.464
	29.4702	9.6312*n*	9.5688*n*	9.8923*n*	. . .	9.7493	9.9311*n*	0.2577*n*	—1.551
PROFESSOR NEWCOMB'S OBSERVATIONS.									
1874.									
Sept. 26	. . .	9.9023	0.0985*n*	9.9811*n*	9.1775	8.7715	9.6991*n*	9.3802	+0.002
	26.5002	9.8241	0.0468*n*	9.8379*n*	. . .	8.8020*n*	9.9399	9.5185	—0.166
Oct. 1	. . .	9.9429	0.2108*n*	9.8858*n*	9.7073	8.6643*n*	8.1416*n*	9.7160*n*	+0.807
	1.4848	9.2905	9.5775*n*	8.7417*n*	. . .	9.4985	9.9761	9.9638	—0.890
2	. . .	9.9204	0.2015*n*	9.8425*n*	9.7613	8.6829*n*	7.9073	9.0043	—0.723
	2.4903	9.2357	9.5263*n*	8.3203*n*	. . .	9.5934	9.9614	9.8633*n*	+0.753
3	. . .	9.8935	0.1882*n*	9.8002*n*	9.8059	8.6859*n*	8.3578	9.5682	—0.082
	3.4777	9.1900	9.4813*n*	7.7610	. . .	9.6672	9.9433	9.3617*n*	+0.247
13	13.4942	8.9944	9.1140*n*	9.1607	. . .	9.9756	9.3866	8.9542	—0.103
14	. . .	8.5025*n*	9.8671*n*	9.8282*n*	9.9892	7.6887	7.8996*n*	9.5682*n*	+0.664
	14.5198	8.9931	9.0696*n*	9.1900	. . .	9.9830	9.2128	9.7853*n*	+0.595
15	. . .	9.0468*n*	9.8418*n*	9.8696*n*	9.9861	8.0825	8.3136*n*	9.9345	—0.573
	15.5133	8.9949	9.0217*n*	9.2164	. . .	9.9871	8.9281	9.5441	—0.366
19	. . .	9.6137*n*	9.8134*n*	0.0170*n*	9.9442	8.6293	8.9125*n*	9.7993	—0.405
	19.5124	9.0301	8.7185*n*	9.3154	. . .	9.9746	9.3543*n*	9.6628	—0.481
20	. . .	9.6789*n*	9.8263*n*	0.0454*n*	9.9260	8.7015	8.9973*n*	8.3010	+0.180
	20.4956	9.0466	8.5700*n*	9.3399	. . .	9.9642	9.4761*n*	8.9031*n*	+0.059
23	. . .	9.8161*n*	9.8997*n*	0.0646*n*	9.8481	8.8669	9.2049*n*	9.4314*n*	+0.349
	23.4933	9.1191	8.2637	9.4199	. . .	9.9139	9.7020*n*	9.5051*n*	+0.302
27	. . .	9.9123*n*	0.0204*n*	0.1375*n*	9.6702	9.0270	9.4366*n*	0.0000	—0.164
	27.4602	9.2888	9.1643	9.5612	. . .	9.7887	9.8512*n*	9.2304	—0.169

The equations of condition arising from the differences of right ascension and declination have been given equal weight, and furnish the following systems of normal equations:

1875.

$$
\begin{aligned}
&+16.7596\,.x + 8.9001\,.y + 6.1209\,.z - 6.0528\,.w + 1.1743\,.u + 2.6167\,.t - 16.''2219 = 0\\
&+8.9001\,.x + 77.1729\,.y + 42.7299\,.z - 10.5939\,.w - 0.0632\,.u + 1.9601\,.t + 33.8850 = 0\\
&+6.1209\,.x + 42.7299\,.y + 34.1899\,.z - 10.5975\,.w + 0.3814\,.u + 0.9761\,.t + 33.2205 = 0\\
&-6.0528\,.x - 10.5939\,.y - 10.5975\,.z + 43.1769\,.w + 0.1208\,.u - 1.4722\,.t - 52.4452 = 0\\
&+1.1743\,.x - 0.0632\,.y + 0.3814\,.z + 0.1208\,.w + 39.4994\,.u - 5.7029\,.t - 29.9844 = 0\\
&+2.6167\,.x + 1.9601\,.y + 0.9761\,.z - 1.4722\,.w - 5.7029\,.u + 16.5668\,.t - 2.7134 = 0\\
&\qquad nn = +172.2740
\end{aligned}
$$

1876.

$$
\begin{aligned}
&+10.8740\,.x + 4.4769\,.y + 2.3218\,.z - 2.8783\,.w - 1.0110\,.u + 2.2742\,.t - 15.''3876 = 0\\
&+4.4769\,.x + 67.0181\,.y + 20.1945\,.z + 7.1517\,.w + 0.0217\,.u + 1.3243\,.t - 39.0458 = 0\\
&+2.3218\,.x + 20.1945\,.y + 10.6176\,.z + 0.1912\,.w + 0.7034\,.u + 0.5950\,.t - 8.8012 = 0\\
&-2.8783\,.x + 7.1517\,.y + 0.1912\,.z + 31.8675\,.w - 0.0255\,.u - 0.1834\,.t - 33.4862 = 0\\
&-1.0110\,.x + 0.0217\,.y + 0.7034\,.z - 0.0255\,.w + 27.3998\,.u - 7.9912\,.t - 18.2681 = 0\\
&+2.2742\,.x + 1.3243\,.y + 0.5950\,.z - 0.1834\,.w - 7.9912\,.u + 14.1816\,.t + 2.5071 = 0\\
&\qquad nn = +107.4528
\end{aligned}
$$

1877.

$$
\begin{aligned}
&+9.1240\,.x + 7.1652\,.y + 1.4115\,.z - 0.9525\,.w - 2.9304\,.u + 2.0363\,.t - 18.''3646 = 0\\
&+7.1652\,.x + 52.5517\,.y + 5.5360\,.z + 1.4234\,.w + 0.0714\,.u + 1.4763\,.t - 48.8493 = 0\\
&+1.4115\,.x + 5.5360\,.y + 5.5168\,.z - 2.5107\,.w + 0.3005\,.u + 0.8509\,.t - 4.1290 = 0\\
&-0.9525\,.x + 1.4234\,.y - 2.5107\,.z + 26.5745\,.w + 0.2816\,.u + 0.4661\,.t - 29.6486 = 0\\
&-2.9304\,.x + 0.0714\,.y + 0.3005\,.z + 0.2816\,.w + 21.2246\,.u - 8.0695\,.t - 6.6992 = 0\\
&+2.0363\,.x + 1.4763\,.y + 0.8509\,.z + 0.4661\,.w - 8.0695\,.u + 12.3140\,.t - 2.2214 = 0\\
&\qquad nn = +110.9353
\end{aligned}
$$

The solution of these normal equations gives the following values of the unknown quantities:

1875.

$x =$	ΔE	$= +1.''6266 \pm 0.''0902$	weight $= 14.7187$
$y =$	$e.\Delta P$	$= +0.1063 \pm 0.0715$	" $= 23.4143$
$z =$	Δe	$= -1.0342 \pm 0.1097$	" $= 9.9578$
$w =$	Δa	$= +1.2240 \pm 0.0559$	" $= 38.3892$
$u =$	$\sin J \Delta N$	$= +0.7644 \pm 0.0567$	" $= 37.2606$
$t =$	ΔJ	$= +0.3271 \pm 0.0886$	" $= 15.2642$

1876.

$x =$	$+1.''6925 \pm 0.''1011$	weight $= 9.7632$
$y =$	$+0.5530 \pm 0.0608$	" $= 27.0555$
$z =$	-0.6585 ± 0.1520	" $= 4.3253$
$w =$	$+1.0838 \pm 0.0583$	" $= 29.4126$
$u =$	$+0.7336 \pm 0.0663$	" $= 22.7428$
$t =$	-0.0449 ± 0.0933	" $= 11.4700$

1877.

x	$= + 1.7703'' \pm 0.0954''$	weight	$= 7.5758$
y	$= + 0.6394 \pm 0.0403$	"	$= 42.4034$
z	$= + 0.1201 \pm 0.1231$	"	$= 4.5485$
w	$= + 1.1472 \pm 0.0526$	"	$= 24.9053$
u	$= + 0.5985 \pm 0.0670$	"	$= 15.3546$
t	$= + 0.1514 \pm 0.0876$	"	$= 8.9813$

The mean distance of Iapetus from Saturn has been assumed as 514″.37, and this has been put equal to unity in the equations of condition. Changing the values of the corrections to angular measure, we have the corrections to the elements as follows:

1875.

ΔE	$= + 0.1812^\circ$	$\pm 0.0101^\circ$
ΔP	$= + 0.4001$	± 0.2693
ΔN	$= + 0.3520$	± 0.0261
ΔJ	$= + 0.0364$	± 0.0099
Δa	$= + 1.2240''$	± 0.0559
Δe	$= - 0.00201$	± 0.00021

1876.

ΔE	$= + 0.1885^\circ$	$\pm 0.0113^\circ$
ΔP	$= + 2.0817$	± 0.2287
ΔN	$= + 0.3376$	± 0.0305
ΔJ	$= - 0.0050$	± 0.0104
Δa	$= + 1.0838''$	± 0.0583
Δe	$= - 0.00128$	± 0.00030

1877.

ΔE	$= + 0.1972^\circ$	$\pm 0.0106^\circ$
ΔP	$= + 2.4069$	± 0.1518
ΔN	$= + 0.2752$	± 0.0308
ΔJ	$= + 0.0169$	± 0.0098
Δa	$= + 1.1472''$	± 0.0526
Δe	$= + 0.00023$	± 0.00026

Applying these corrections to the assumed elements, we have, as the result of the observations in right ascension and declination, the following new elements:

1875.

Epoch, 1875. Sept. 27.5, Greenwich m. t.

	°	′	′	
E =	178	27.92 ±	0.61	App. equinox of epoch.
P =	348	25.47 ±	16.16	
N =	53	14.17 ±	1.57	
J =	14	2.07 ±	0.59	
		″	″	
a =		515.594 ±	0.0559	
e =		0.02758 ±	0.00021	

1876.

Epoch, 1876. Aug. 29.0, Greenwich m. t.

	°	′	′	
E =	265	29.54 ±	0.68	App. equinox of epoch.
P =	350	7.13 ±	13.72	
N =	53	12.70 ±	1.83	
J =	14	0.16 ±	0.62	
		″	″	
a =		515.454 ±	0.0583	
e =		0.02831 ±	0.00030	

1877.

Epoch, 1877. Nov. 6 5, Greenwich m. t.

	°	′	′	
E =	77	14.36 ±	0.64	App. equinox of epoch.
P =	350	27.64 ±	9.10	
N =	53	8.25 ±	1.85	
J =	14	2.22 ±	0.59	
		″	″	
a =		515.517 ±	0.0526	
e =		0.02982 ±	0.00026	

In the year 1875 there are five residuals that exceed a second of arc, and they are all in the difference of right ascension. In 1876 there are four residuals that exceed a second, and the largest is in the difference of declination. In 1877 there is no residual that amounts to a second, the one formerly published being erroneous. The large residual of 1875, 1″.492, occurs on a night when the observations were stopped by clouds, and there are few comparisons. On account of this condition the

observation might fairly be rejected, but in this work no observation has been rejected. When observations have been honestly made I dislike to enter on the process of culling them. By rejecting the large residuals the work is made to appear more accurate than it really is, and thus we fail to get the right estimate of its quality. Denoting the weight by p, the residual by v, and by r_1 the probable error of a single equation, we have the following results for the different years:

1875.

$$[nn.6] = 27''.136, \qquad r_1 = \pm 0''.346$$
$$\Sigma.pv^2 = 27.095$$

109 equations of condition.

1876.

$$[nn.6] = 15''.806, \qquad r_1 = \pm 0''.316$$
$$\Sigma.pv^2 = 15.803$$

78 equations of condition.

1877.

$$[nn.6] = 8''.336, \qquad r_1 = \pm 0''.263$$
$$\Sigma.pv^2 = 8.324$$

61 equations of condition.

This method of observing Iapetus will give, I think, good results, and after the ring of the planet has closed, so as to permit a view of the upper and lower parts of the ball, it will be well to make another series of observations of the differences of right ascension and declination.

The observations of angle of position and distance give the following sets of normal equations, the measures of distance being given double weight:

1875–1878.

$$\begin{array}{rrrrrrrrrrrrrrr}
+70.8066 & .x & + 7.1277 & .y & + 4.1550 & .z & - 8.3098 & .w & + 0.2405 & .u & +10.4263 & .t & -107''.9964 & = & 0 \\
+ 7.1277 & .x & +293.1059 & .y & +86.0456 & .z & + 2.3324 & .w & + 1.2069 & .u & + 6.0351 & .t & -414.2721 & = & 0 \\
+ 4.1550 & .x & + 86.0456 & .y & +46.8684 & .z & - 6.1056 & .w & - 0.1275 & .u & + 1.2765 & .t & - 98.2945 & = & 0 \\
- 8.3098 & .x & + 2.3324 & .y & - 6.1056 & .z & +55.8336 & .w & + 0.9952 & .u & + 0.7832 & .t & - 64.4760 & = & 0 \\
+ 0.2405 & .x & + 1.2069 & .y & - 0.1275 & .z & + 0.9952 & .w & +29.3314 & .u & + 0.7461 & .t & - 37.4225 & = & 0 \\
+10.4263 & .x & + 6.0351 & .y & + 1.2765 & .z & + 0.7832 & .w & + 0.7461 & .u & +47.8547 & .t & - 16.7702 & = & 0 \\
 & & & & & & & & & & & & nn = & + & 935.4618
\end{array}$$

1878–1881.

$$\begin{array}{rrrrrrrrrrrrrrr}
+34.5511 & .x & + 8.2555 & .y & + 3.5861 & .z & - 9.2198 & .w & - 2.7775 & .u & + 3.5843 & .t & - 77''.0645 & = & 0 \\
+ 8.2555 & .x & +129.1065 & .y & -34.5087 & .z & -10.4588 & .w & - 1.1750 & .u & + 0.4743 & .t & -232.1264 & = & 0 \\
+ 3.5861 & .x & - 34.5087 & .y & +29.3332 & .z & + 0.1390 & .w & - 0.3800 & .u & + 2.8910 & .t & + 73.8070 & = & 0 \\
- 9.2198 & .x & - 10.4588 & .y & + 0.1390 & .z & +19.5728 & .w & + 6.8004 & .u & + 5.1300 & .t & + 9.9380 & = & 0 \\
- 2.7775 & .x & - 1.1750 & .y & - 0.3800 & .z & + 6.8004 & .w & +26.4045 & .u & +12.8890 & .t & - 3.5085 & = & 0 \\
+ 3.5843 & .x & + 0.4743 & .y & + 2.8910 & .z & + 5.1300 & .w & +12.8890 & .u & +23.6976 & .t & - 1.9035 & = & 0 \\
 & & & & & & & & & & & & nn = & + & 629.1685
\end{array}$$

1883–1884.

$$
\begin{array}{rrrrrrrr}
+56.7553 . x & -3.6394 . y & -6.2599 . z & +9.4620 . w & +1.0418 . u & +10.0009 . t & -43.9170'' & = 0 \\
-3.6394 . x & +25.9215 . y & -35.0355 . z & -7.9016 . w & +0.1646 . u & +0.0886 . t & -63.2519 & = 0 \\
-6.2599 . x & -35.0355 . y & +253.3775 . z & -2.2002 . w & -5.1436 . u & +2.0578 . t & +360.5746 & = 0 \\
+9.4620 . x & -7.9016 . y & -2.2002 . z & +52.7002 . w & +17.9550 . u & -6.3838 . t & -7.2218 & = 0 \\
+1.0418 . x & +0.1646 . y & -5.1436 . z & +17.9550 . w & +42.8196 . u & -10.9892 . t & +13.8218 & = 0 \\
+10.0009 . x & +0.0886 . y & +2.0578 . z & -6.3838 . w & -10.9892 . u & +29.6839 . t & -0.7050 & = 0 \\
 & & & & & & nn = +609.8530 &
\end{array}
$$

PROFESSOR NEWCOMB'S OBSERVATIONS.

1874.

$$
\begin{array}{rrrrrrrr}
+9.0824 . x & -6.7181 . y & +0.5863 . z & -0.3969 . w & +0.3743 . u & +0.8949 . t & -1.4711'' & = 0 \\
-6.7181 . x & +27.1528 . y & +19.4204 . z & -13.0004 . w & -0.8193 . u & +0.2610 . t & +4.9233 & = 0 \\
+0.5863 . x & +19.4204 . y & +18.7139 . z & -12.0523 . w & +0.7011 . u & +1.3988 . t & +3.5435 & = 0 \\
-0.3969 . x & -13.0004 . y & -12.0523 . z & +10.2290 . w & +0.2489 . u & -0.9750 . t & -2.9792 & = 0 \\
+0.3743 . x & -0.8193 . y & +0.7011 . z & +0.2489 . w & +6.0840 . u & -0.0190 . t & +0.0857 & = 0 \\
+0.8949 . x & +0.2610 . y & +1.3988 . z & -0.9750 . w & -0.0190 . u & +4.9893 . t & +0.0965 & = 0 \\
 & & & & & & nn = +8.0755 &
\end{array}
$$

The solutions of these sets of equations give the following corrections to the elements and the corresponding weights:

1875–1878.

$x =$	ΔE	$= + 1.5819'' \pm 0.0594''$	weight	$= 67.0511$
$y =$	$e . \Delta P$	$= + 1.6078 \pm 0.0424$	"	$= 131.5270$
$z =$	Δe	$= - 0.8275 \pm 0.1078$	"	$= 20.3504$
$w =$	Δa	$= + 1.2149 \pm 0.0669$	"	$= 52.7481$
$u =$	$\sin . J . \Delta N$	$= + 1.1573 \pm 0.0898$	"	$= 29.2920$
$t =$	ΔJ	$= - 0.2128 \pm 0.0716$	"	$= 46.1354$

$[nn . 6] = 61.8183''$; probable error of an angle $= \pm 0.486''$

$\Sigma . pv^2 = 61.8151$; probable error of a distance $= \pm 0.344$

126 equations of condition.

1878–1881.

$x =$	$+ 2.4950'' \pm 0.0912''$	weight	$= 30.3914$
$y =$	$+ 1.5104 \pm 0.0560$	"	$= 80.5217$
$z =$	$- 0.9694 \pm 0.1037$	"	$= 18.6826$
$w =$	$+ 1.5348 \pm 0.1320$	"	$= 14.5022$
$u =$	$+ 0.4323 \pm 0.1178$	"	$= 18.1977$
$t =$	$- 0.7764 \pm 0.1269$	"	$= 15.6896$

$[nn . 6] = 29.9484''$; probable rror of an angle $= \pm 0.503''$

$\Sigma . pv^2 = 29.9948$; probable error of a distance $= \pm 0.355$

60 equations of condition.

1883–1884.

x	$= + 0''.7106 \pm 0''.0765$	weight	$= 40.7997$
y	$= + 0.8873 \pm 0.1106$	"	$= 19.4981$
z	$= - 1.2919 \pm 0.0345$	"	$= 201.0050$
w	$= + 0.2889 \pm 0.0765$	"	$= 40.8147$
u	$= - 0.7037 \pm 0.0841$	"	$= 33.7941$
t	$= - 0.3272 \pm 0.0983$	"	$= 24.7127$

$[nn.6] = 45.0974$; probable error of an angle $= \pm 0''.488$

$\Sigma.pv^2 = 45.1074$; probable error of a distance $= \pm 0.345$

92 equations of condition.

PROFESSOR NEWCOMB'S OBSERVATIONS.

1874.

x	$= + 0''.3348 \pm 0''.4689$	weight	$= 0.9510$
y	$= + 0.2010 \pm 0.5468$	"	$= 0.6993$
z	$= - 0.2010 \pm 0.7907$	"	$= 0.6252$
w	$= + 0.3256 \pm 0.3080$	"	$= 2.2049$
u	$= + 0.0023 \pm 0.2166$	"	$= 4.4587$
t	$= + 0.0301 \pm 0.2174$	"	$= 4.4261$

$[nn.6] = 6.8942$; probable error of an angle $= \pm 0''.457$

$\Sigma.pv^2 = 6.8936$; probable error of a distance $= \pm 0.323$

21 equations of condition.

In comparing the elements with the observed angles of position and the distances, the mean distance of the satellite was assumed to be $514''.37$, except in the group 1883–1884, where this quantity was assumed to be $515''.00$. The values of the corrections to be applied to the assumed elements are as follows:

1875–1878.

ΔE	$= + 0^\circ.1762$	$\pm 0^\circ.0066$
ΔP	$= + 6.0525$	± 0.1596
ΔN	$= + 0.5329$	± 0.0414
ΔJ	$= - 0.0237$	± 0.0080
Δa	$= + 1''.2149$	$\pm 0''.0669$
Δe	$= - 0.00161$	± 0.00021

1878–1881.

$$\Delta E = +0.2779^\circ \pm 0.0102^\circ$$
$$\Delta P = +5.6859 \pm 0.2109$$
$$\Delta N = +0.1986 \pm 0.0541$$
$$\Delta J = -0.0865 \pm 0.0141$$
$$\Delta a = +1.5348'' \pm 0.1320''$$
$$\Delta e = -0.00188 \pm 0.00020$$

1883–1884.

$$\Delta E = +0.0791^\circ \pm 0.0085^\circ$$
$$\Delta P = +3.3361 \pm 0.4159$$
$$\Delta N = -0.3217 \pm 0.0385$$
$$\Delta J = -0.0364 \pm 0.0109$$
$$\Delta a = +0.2887'' \pm 0.0764''$$
$$\Delta e = -0.00251 \pm 0.00007$$

PROFESSOR NEWCOMB'S OBSERVATIONS.

1874.

$$\Delta E = +0.0373^\circ \pm 0.0522^\circ$$
$$\Delta P = +0.7566 \pm 2.0585$$
$$\Delta N = +0.0011 \pm 0.0998$$
$$\Delta J = +0.0034 \pm 0.0242$$
$$\Delta a = +0.3256'' \pm 0.3080''$$
$$\Delta e = -0.00039 \pm 0.00154$$

The preceding corrections applied to the assumed elements give the following sets of elements as the result of the measurements of angles and distances:

1875–1878.

Epoch, 1876. Oct. 16.5, Greenwich m. t.

$$\left.\begin{array}{l} E = 125^\circ\ 34'.23 \pm 0'.40 \\ P = 354\ \ 5.49 \pm 9.58 \\ N = 53\ \ 24.33 \pm 2.48 \\ J = 13\ \ 59.13 \pm 0.48 \end{array}\right\} \text{App. equinox of epoch.}$$

$$a = 515''.585 \pm 0''.067$$
$$e = 0.02798 \pm 0.00021$$

1878–1881.

Epoch, 1879. Nov. 13.5, Greenwich m. t.

E =	181°	47.26′	±	0.61′	App. equinox of epoch.
P =	353	46.07	±	12.65	
N =	53	2.55	±	3.25	
J =	13	57.26	±	0.85	
a =		515.905″	±	0.132″	
e =		0.02771	±	0.00020	

1883–1884.

Epoch, 1883. Dec. 18.5, Greenwich m. t.

E =	130°	33.90′	±	0.51′	App. equinox of epoch.
P =	351	28.52	±	24.95	
N =	52	29.20	±	2.31	
J =	14	2.92	±	0.65	
a =		515.289″	±	0.076″	
e =		0.02708	±	0.00007	

PROFESSOR NEWCOMB'S OBSERVATIONS.

1874.

Epoch, 1874. Oct. 14.5, Greenwich m. t.

E =	39°	6.99′	±	3.13′
P =	348	46.06	±	123.51
N =	52	53.80	±	5.99
J =	13	59.38	±	1.45
a =		514.696″	±	0.308″
e =		0.02920	±	0.02421

The preceding reductions include all the observations of Iapetus made at Washington from the mounting of the 26-inch refractor until February 29, 1884. If we examine the residuals in the equations for the angles and distances in my own observations, we find that among the 278 equations of condition there are 30 residuals that exceed a second of arc, and that 26 of these are in the angles. The method of making these observations by sliding the eye-piece has been mentioned, but the greater

number of large residuals in the angles probably comes from the inferior accuracy of the position circle. This circle is 7¼ inches in diameter, and is divided to two-tenths of a degree. The angles were observed with the long wire that is placed parallel to the axis of the micrometer, and it was the rule to verify the zero of the circle on every night when the satellite was observed. But as the apparent distance near elongation amounts to 550″, an error of a tenth of a degree in the angle would produce an error of nearly a second of arc in the position of the satellite. The ring of the planet, and its changing position, might also, I think, tend to produce small errors in the measurements which would be greater in the angles than in the distances. The gibbousness of the planet has been neglected in the reductions, but this would hardly affect the hundredths of a second of arc. The observations in the first two groups extend over considerable time, and since the periodical perturbations by the sun are large, a part of the residual may be produced by these perturbations causing a little departure from the assumed pure elliptic motion; but I think the residuals are due chiefly to errors of observation.

Professor Newcomb's observations have been compared with the elements computed by Tisserand from the same observations. Tisserand reduced the angles and distances to rectangular co-ordinates, but here the elements have been compared directly with the observed quantities, and in the equations of condition the distances have been given double weight. The observations are too few in this case to determine the elements with much accuracy, and it will be noticed, also, that all these observations were made when the satellite was on one side of the planet.

§ 6. Iapetus is so distant from its primary, that notwithstanding the distance of Saturn from the sun the mass of this great central body exerts an important influence on the motion of the satellite. The effects of this perturbation can be found from Lagrange's equations for the variations of the elements. If a is the mean distance of the satellite from Saturn, M its mean anomaly at the epoch, e the eccentricity of its orbit, g the distance from the node to the perisaturnium, i the inclination of its orbit to the plane of reference, and θ the longitude of the node on this plane, we have (Hansen, Astr. Nach., No. 166)

$$\frac{da}{dt} = -2a^2 n \cdot \left(\frac{dR}{dM}\right)$$

$$\frac{dM}{dt} = +2a^2 n \cdot \left(\frac{dR}{da}\right) + an \cdot \frac{1-e^2}{e} \cdot \left(\frac{dR}{de}\right)$$

$$\frac{de}{dt} = -an \cdot \frac{1-e^2}{e} \cdot \left(\frac{dR}{dM}\right) + an \cdot \frac{\sqrt{1-e^2}}{e} \cdot \left(\frac{dR}{dg}\right)$$

$$\frac{dg}{dt} = -an \cdot \frac{\sqrt{1-e^2}}{e} \cdot \left(\frac{dR}{de}\right) + an \cdot \frac{\cos i}{\sin i \sqrt{1-e^2}} \cdot \left(\frac{dR}{di}\right)$$

$$\frac{di}{dt} = -an \cdot \frac{\cos i}{\sin i \sqrt{1-e^2}} \cdot \left(\frac{dR}{dg}\right) + an \cdot \frac{1}{\sin i \sqrt{1-e^2}} \cdot \left(\frac{dR}{d\theta}\right)$$

$$\frac{d\theta}{dt} = -an \cdot \frac{1}{\sin i \sqrt{1-e^2}} \cdot \left(\frac{dR}{di}\right)$$

In these equations n is the mean motion of the satellite, and R is the perturbative function of Laplace. If E be the mean longitude, and P the longitude of the perisaturnium with respect to the plane of reference, we have

$$E = M + P, \qquad E = M + g + \theta, \qquad dE = dM + dg + d\theta;$$
$$P = g + \theta, \qquad dP = dg + d\theta.$$

Substituting the preceding values of dM, dg, $d\theta$, we have the following values of the variations of the elements in common use:

$$\frac{da}{dt} = -2a^2n \cdot \left(\frac{dR}{dE}\right)$$

$$\frac{dE}{dt} = +2a^2n \cdot \left(\frac{dR}{da}\right) - an \cdot \frac{e\sqrt{1-e^2}}{1+\sqrt{1-e^2}} \cdot \left(\frac{dR}{de}\right) - an \cdot \frac{\tang \frac{1}{2} i}{\sqrt{1-e^2}} \cdot \left(\frac{dR}{di}\right)$$

$$\frac{de}{dt} = +an \cdot \frac{\sqrt{1-e^2}}{e} \cdot \left(\frac{dR}{dP}\right) + an \cdot \frac{e\sqrt{1-e^2}}{1+\sqrt{1-e^2}} \cdot \left(\frac{dR}{dE}\right)$$

$$\frac{dP}{dt} = -an \cdot \frac{\sqrt{1-e^2}}{e} \cdot \left(\frac{dR}{de}\right) - an \cdot \frac{\tang \frac{1}{2} i}{\sqrt{1-e^2}} \cdot \left(\frac{dR}{di}\right)$$

$$\frac{di}{dt} = +an \cdot \frac{1}{\sin i \sqrt{1-e^2}} \cdot \left(\frac{dR}{d\theta}\right) + an \cdot \frac{\tang \frac{1}{2} i}{\sqrt{1-e^2}} \cdot \left\{\left(\frac{dR}{dE}\right) + \left(\frac{dR}{dP}\right)\right\}$$

$$\frac{d\theta}{dt} = -an \cdot \frac{1}{\sin i \sqrt{1-e^2}} \cdot \left(\frac{dR}{di}\right)$$

If X, Y, Z be the co-ordinates of the sun, D its distance from Saturn, and S its mass; and if x, y, z be the co-ordinates of the satellite, the value of R is

$$R = \frac{S.(Xx + Yy + Zz)}{D^3} - \frac{S}{[(X-x)^2 + (Y-y)^2 + (Z-z)^2]^{\frac{1}{2}}}$$

If f be the angle between the sun and the satellite, and r the radius of the satellite, we have also

$$R = \frac{S.r}{D^2} \cos f - \frac{S}{D}\left(1 + \frac{r^2}{D^2} - \frac{2r}{D} \cos f\right)^{-\frac{1}{2}}$$

Expanding the radical part,

$$R = \frac{S}{D} \cdot \left\{-1 + \frac{1}{2} \cdot \frac{r^2}{D^2} \cdot (1 - 3 \cos f^2) + \frac{1}{2} \cdot \frac{r^3}{D^3} \cdot (3 \cos f - 5 \cos f^3) + \text{etc.}\right\}$$

We can neglect the term $-\frac{S}{D}$, which does not contain the elements of the satellite; and if we neglect also the terms divided by the higher powers of D, the perturbative function takes the form

$$R = \frac{S \cdot r^2}{2D^3} \cdot (1 - 3 \cos f^2)$$

We take the orbit of the planet as the plane of reference, and denote by U and u the angular distances of the sun and the satellite from the node; then

$$\cos f = \cos u \cos U + \sin u \sin U \cos i$$

In order to reduce $\cos f$ to a single term, make the common substitution,

$$\cos \beta \sin \alpha = \sin U \cos i$$

$$\cos \beta \cos \alpha = \cos U$$

$$\sin \beta = \sin U \sin i$$

and if v be the true anomaly of the satellite,

$$\cos f = \cos \beta \cos (g + v - \alpha)$$

Hence

$$R = \frac{3S \cdot r^2}{4D^3} \cdot \left\{ \sin \beta^2 - \frac{1}{3} - \cos \beta^2 \cos 2(g + v - \alpha) \right\}$$

The periodical part of the perturbation, which depends on the position of the satellite in its orbit, is so small that it is omitted, and we need therefore only the non-periodical part of r^2 and of $r^2 \cos 2v$ and $r^2 \sin 2v$. Now it is known that these values are, respectively, $a^2\left(1 + \frac{3}{2} e^2\right)$, $\frac{5}{2} \cdot a^2 e^2$, and 0, and the value of R becomes

$$R = \frac{3S \cdot a^2}{4D^3} \cdot \left\{ \left(1 + \frac{3}{2} e^2\right) \left(\sin \beta^2 - \frac{1}{3}\right) - \frac{5}{2} e^2 \cos \beta^2 \cos 2(g - \alpha) \right\}$$

The differential equations of Lagrange require the partial differential coefficients of the perturbative function with respect to the elements of the orbit of the satellite. The last value of R gives

$$\left(\frac{dR}{dM}\right) = 0$$

$$\left(\frac{dR}{da}\right) = \frac{3Sa}{2D^3} \cdot \left\{ \left(1 + \frac{3}{2} e^2\right) \left(\sin \beta^2 - \frac{1}{3}\right) - \frac{5}{2} e^2 \cos \beta^2 \cos 2(g - \alpha) \right\}$$

$$\left(\frac{dR}{de}\right) = \frac{3Sa^2}{4D^3} e \cdot \{3 \sin \beta^2 - 1 - 5 \cos \beta^2 \cos 2(g - \alpha)\}$$

$$\left(\frac{dR}{dg}\right) = \frac{3Sa^2}{4D^3} \cdot 5e^2 \cos \beta^2 \sin 2(g - \alpha)$$

This value of R gives, also,

$$\left(\frac{dR}{d\alpha}\right) = -\left(\frac{dR}{dg}\right)$$

$$\left(\frac{dR}{d\beta}\right) = \frac{3Sa^2}{4D^3} \cdot \sin 2\beta \cdot \left\{1 + \tfrac{3}{2} e^2 + \tfrac{5}{2} \cdot e^2 \cos 2(g - \alpha)\right\}$$

and since α and β are functions of i and θ, we have

$$\left(\frac{dR}{di}\right) = \left(\frac{dR}{d\alpha}\right) \cdot \frac{d\alpha}{di} + \left(\frac{dR}{d\beta}\right) \cdot \frac{d\beta}{di}$$

$$\left(\frac{dR}{d\theta}\right) = \left(\frac{dR}{d\alpha}\right) \cdot \frac{d\alpha}{d\theta} + \left(\frac{dR}{d\beta}\right) \cdot \frac{d\beta}{d\theta}$$

Substituting in the equations for α and β the value of $U = L - \theta$, where L is the longitude of the sun, we have

$$\left(\frac{dR}{di}\right) = \frac{3Sa^2}{4D^3} \cdot \sin 2\beta \cdot \left\{(1 + \tfrac{3}{2} e^2) \sin \alpha + \tfrac{5}{2} e^2 \sin (2g - \alpha)\right\}$$

$$\left(\frac{dR}{d\theta}\right) = \frac{3Sa^2}{4D^3} \cdot \left\{5e^2 \sin 2(g - \alpha) \cos i \cos \beta^2 - \sin 2\beta \cdot \left[(1 + \tfrac{3}{2} e^2) \cos \alpha \sin i + \tfrac{5}{2} e^2 \sin i \cos (2g - \alpha)\right]\right\}$$

Substituting these values of the partial derivatives, we shall have, from Lagrange's equations,

$$\frac{da}{dt} = 0$$

$$\frac{dM}{dt} = \frac{3Sa^3 \cdot n}{4D^3} \cdot \left\{7 \sin \beta^2 - \frac{7}{3} - e^2 - 5e^2 \cos \beta^2 \cos 2(g - \alpha) - 5 \cos \beta^2 \cos 2(g - \alpha) + 3e^2 \sin \beta^2\right\}$$

$$\frac{de}{dt} = \frac{3Sa^3 \cdot n}{4D^3} \cdot 5e\sqrt{1 - e^2} \cdot \cos \beta^2 \sin 2(g - \alpha)$$

$$\frac{dg}{dt} = \frac{3Sa^3 \cdot n}{4D^3} \cdot \sqrt{1 - e^2} \cdot \left\{1 - 3 \sin \beta^2 + 5 \cos \beta^2 \cos 2(g - \alpha) + \frac{\sin 2\beta}{1 - e^2} \cdot \left[(1 + \tfrac{3}{2} e^2) \sin \alpha + \tfrac{5}{2} e^2 \sin (2g - \alpha)\right] \frac{\cos i}{\sin i}\right\}$$

$$\frac{di}{dt} = -\frac{3Sa^3 . n}{4D^3} \cdot \frac{\sin 2\beta}{\sqrt{1-e^2}} \cdot \left\{(1+\tfrac{3}{2}e^2)\cos\alpha + \tfrac{5}{2}e^2\cos(2g-\alpha)\right\}$$

$$\frac{d\theta}{dt} = -\frac{3Sa^3 . n}{4D^3} \cdot \frac{\sin 2\beta}{\sin i . \sqrt{1-e^2}} \cdot \left\{(1+\tfrac{3}{2}e^2)\sin\alpha + \tfrac{5}{2}e^2\sin(2g-\alpha)\right\}$$

We have now to eliminate α and β from these equations, and to introduce U, i, and g. This is readily done by means of the equations

$$\sin\beta^2 = \frac{\sin i}{2}(1-\cos 2U)$$

$$\cos\beta^2\cos 2(g-\alpha) = \tfrac{1}{2}\cdot[(1+\cos 2U)\cos 2g - \cos i^2(1-\cos 2U)\cos 2g + 2\cos i\sin 2U\sin 2g]$$

$$\cos\beta^2\sin 2(g-\alpha) = \tfrac{1}{2}\cdot[(1+\cos 2U)\sin 2g - \cos i^2(1-\cos 2U)\sin 2g - 2\cos i\sin 2U\cos 2g]$$

$$\sin 2\beta\cos\alpha = \sin 2U\sin i$$

$$\sin 2\beta\sin\alpha = (1-\cos 2U)\sin i\cos i$$

$$\sin 2\beta\cos(2g-\alpha) = \sin i . [\sin 2U\cos 2g + (1-\cos 2U)\cos i\sin 2g]$$

$$\sin 2\beta\sin(2g-\alpha) = \sin i . [\sin 2U\sin 2g - (1-\cos 2U)\cos i\cos 2g]$$

The result of the elimination is

$$\frac{da}{dt} = 0$$

$$\frac{dM}{dt} = \frac{3Sa^3 . n}{4D^3} \cdot \left\{\left[\tfrac{7}{2}\sin i^2 + \tfrac{5}{2}\cos 2g\cos i^2(1+e^2) + \frac{3e^2\sin i^2}{2}\right]\cdot(1-\cos 2U) - \tfrac{5}{2}\cos 2g(1+\cos 2U)(1+e^2) - \tfrac{7}{3} - e^2 - 5\cos i\sin 2g\sin 2U . (1+e^2)\right\}$$

$$\frac{de}{dt} = \frac{3Sa^3 . n}{4D^3} \cdot \frac{5e}{2} \cdot \sqrt{1-e^2} . \{\sin i^2\sin 2g + (1+\cos i^2)\cos 2U\sin 2g - 2\cos i\sin 2U\cos 2g\}$$

$$\frac{dg}{dt} = \frac{3Sa^3 . n}{4D^3} \cdot \sqrt{1-e^2} \cdot \left\{1 - \frac{3\sin i^2}{2}(1-\cos 2U) + \tfrac{5}{2}(1+\cos 2U)\cos 2g - \frac{5\cos i^2}{2}(1-\cos 2U)\cos 2g + 5\cos i\sin 2U\sin 2g + \left(1+\tfrac{3}{2}e^2\right)\cdot(1-\cos 2U)\frac{\cos i^2}{1-e^2} + \frac{5e^2\cos i}{2(1-e^2)}\cdot[\sin 2U\sin 2g - (1-\cos 2U)\cos i\cos 2g]\right\}$$

$$\frac{di}{dt} = -\frac{3Sa^2 . n}{4D^3} \cdot \frac{\sin i}{\sqrt{1-e^2}} \cdot \left\{ \left[1 + \tfrac{3}{2} e^2 + \tfrac{5}{2} e^2 \cos 2g \right] \sin 2U + \tfrac{5}{2} e^2 \cos i \sin 2g \, (1 - \cos 2U) \right\}$$

$$\frac{d\theta}{dt} = -\frac{3Sa^2 . n}{4D^3} \cdot \frac{1}{\sqrt{1-e^2}} \cdot \left\{ \left[1 + \tfrac{3}{2} e^2 - \tfrac{5}{2} e^2 \cos 2g \right] \cos i \, (1 - \cos 2U) + \tfrac{5}{2} e^2 \sin 2g \sin 2U \right\}$$

In order to get from these equations the secular perturbations of the elements we omit the terms depending on U. Also if we denote by a_0 the mean distance of Saturn from the sun, and by e_0 the eccentricity of its orbit, the non-periodical part of $\frac{1}{D^3}$ is $\frac{1}{a^3_0 (1 - e^2_0)^{\frac{3}{2}}}$. The mass of Saturn being taken for the unit of mass, we have for the coefficient,

$$\frac{3Sa^2 . n}{4D^3} = \frac{3Sa^3 . n}{4a^3_0 (1 - e^2)^{\frac{3}{2}}} = \frac{3}{4} \cdot \frac{n}{(1 - e^2_0)^{\frac{3}{2}}} \cdot \left(\frac{\tau}{\tau_0}\right)^2$$

where τ and τ_0 are the periodic times of the satellite and the planet. Making these changes, the differential equations for the secular perturbations are

$$\frac{da}{dt} = 0$$

$$\frac{dM}{dt} = \frac{3}{4} \cdot \frac{n}{(1 - e^2_0)^{\frac{3}{2}}} \cdot \left(\frac{\tau}{\tau_0}\right)^2 \cdot \left\{ [7 + 3e^2 - 5 (1 + e^2) \cos 2g] \cdot \frac{\sin i^2}{2} - \frac{7}{3} - e^2 \right\}$$

$$\frac{de}{dt} = \frac{3}{4} \cdot \frac{n}{(1 - e^2_0)} \cdot \left(\frac{\tau}{\tau_0}\right)^2 \frac{5e}{2} \cdot \sqrt{1 - e^2} . \sin 2g \sin i^2$$

(A)

$$\frac{dg}{dt} = \frac{3}{4} \cdot \frac{n}{1 - e_0^{\frac{2}{3}}} \cdot \left(\frac{\tau}{\tau_0}\right)^2 \cdot \sqrt{1 - e^2} \left\{ 1 + \frac{\cos i^2}{1 - e^2} + (3 - 5 \cos 2g) \times \frac{e^2 - \sin i}{2 (1 - e^2)} \right\}$$

$$\frac{di}{dt} = -\frac{3}{4} \cdot \frac{n}{(1 - e^2_0)^{\frac{3}{2}}} \cdot \left(\frac{\tau}{\tau_0}\right)^2 \cdot \frac{5e^2}{2} \cdot \frac{\sin i \cos i}{\sqrt{1 - e^2}} \cdot \sin 2g$$

$$\frac{d\theta}{di} = -\frac{3}{4} \cdot \frac{n}{(1 - e^2_0)^{\frac{3}{2}}} \cdot \left(\frac{\tau}{\tau_0}\right)^2 \cdot \frac{\cos i}{\sqrt{1 - e^2}} \cdot (1 + \tfrac{3}{2} e^2 - \tfrac{5}{2} e^2 \cos 2g)$$

For the periodical part of the perturbations the formulæ are

$$\frac{da}{dt} = 0$$

$$\frac{dM}{dt} = \frac{3Sa^2n}{4D^3} \cdot \Big\{ 5(1+e^2)\cos i \sin 2g \sin 2U + \tfrac{5}{2}(1+e^2)(1+\cos i^2)\cos 2g \cos 2U$$
$$+ \frac{7+3e^2}{2} \cdot \sin i^2 \cos 2U$$

$$\frac{de}{dt} = \frac{3Sa^3.n}{4D^3} \cdot \frac{5e}{2} \cdot \sqrt{1-e^2} \cdot \{(1+\cos i^2)\sin 2g \cos 2U - 2\cos i \cos 2g \sin 2U\} \tag{B}$$

$$\frac{dg}{dt} = \frac{3Sa^3.n}{4D^3} \cdot \sqrt{1-e^2} \cdot \Big\{ \frac{3\sin i^2}{2}\cos 2U + \tfrac{5}{2}(1+\cos i^2)\cos 2g \cos 2U$$
$$+ \tfrac{5}{2}\left(\frac{e^2}{1-e^2}+2\right)\cos i \sin 2g \sin 2U + \frac{5e^2\cos 2g - 2 - 3e^2}{2(1-e^2)}\cos i^2 \cos 2U \Big\}$$

$$\frac{di}{dt} = -\frac{3Sa^3.n}{4D^3} \cdot \frac{\sin i}{\sqrt{1-e^2}} \cdot \Big\{ (1+\tfrac{3}{2}e^2+\tfrac{5}{2}e^2\cos 2g)\sin 2U - \tfrac{5}{2}e^2\cos i \sin 2g \cos 2U \Big\}$$

$$\frac{d\theta}{dt} = -\frac{3Sa^3.n}{4D^3} \cdot \frac{1}{\sqrt{1-e^2}} \cdot \Big\{ -(1+\tfrac{3}{2}e^2-\tfrac{5}{2}e^2\cos 2g)\cos i \cos 2U + \tfrac{5}{2}e^2 \sin 2g \sin 2U \Big\}$$

The differential equations (A) for the secular perturbations can be integrated directly in the form given above, but the integration of the equations (B) for the periodical perturbations requires a change of the variable. If g' is the distance of the planet's perihelion from the node, and v' its true anomaly, we have $U = g' + v'$, and

$$dv' = \frac{\sqrt{p}}{D^2} \cdot n_0 a_0^{\frac{3}{2}} \cdot dt$$

Substituting the value of dt from this equation, we have

$$\frac{3Sa^3 \cdot n}{4D^3} \cdot dt = \frac{3}{4} \cdot \frac{\tau}{\tau_0} \cdot \frac{(1+e_0\cos v') \cdot dv'}{(1-e_0^2)^{\frac{3}{2}}}.$$

and this change enables us to integrate the equations giving the periodical part of the perturbations. In this way we have, by integrating,

$$\Delta a = 0$$

$$\Delta M = +\frac{3}{4} \cdot \frac{\tau}{\tau_0} \cdot \frac{1}{(1-e_0)^{\frac{3}{2}}} \cdot \Big\{ \tfrac{5}{2}(1+e^2)\cos i \sin 2g \cos(2g'+2v')$$
$$+ \frac{5e_0}{6} \cdot (1+e^2)\cos i \sin 2g \cos(2g'+3v')$$
$$+ \frac{5e_0}{2} \cdot (1+e^2)\cos i \sin 2g \cos(2g'+v')$$

$$- \left[\frac{5}{4}(1+e^2)(1+\cos i^2)\cos 2g + \frac{7+3e^2}{4}\sin i^2\right] . \sin(2g'+2v')$$

$$- \left[\frac{5}{2}(1+e^2)(1+\cos i^2)\cos 2g + \frac{7+3e^2}{2}\sin i^2\right] \cdot \frac{e_0}{6}\sin(2g'+3v')$$

$$- \left[\frac{5}{2}(1+e^2)(1+\cos i^2)\cos 2g + \frac{7+3e^2}{2}\sin i^2\right] \cdot \frac{e_0}{2}\sin(2g'+v')\Bigg\}$$

$$\Delta e = \frac{15}{8}\cdot\frac{\tau}{\tau_0}\cdot\frac{e\sqrt{1-e^2}}{(1-e_0^2)^{\frac{3}{2}}}\cdot\Bigg\{\frac{1+\cos i^2}{2}\cdot\sin 2g\sin(2g'+2v') \tag{C}$$

$$+ \cos i\cos 2g\cos(2g'+2v') + \frac{e_0}{6}(1+\cos i^2)\sin 2g\sin(2g'+3v')$$

$$+ \frac{e_0}{2}(1+\cos i^2)\sin 2g\sin(2g'+v')$$

$$+ \frac{e_0}{3}\cos i\cos 2g\cos(2g'+3v') + e_0\cos i\cos 2g\cos(2g'+v')\Bigg\}$$

$$\Delta g = +\frac{3}{4}\cdot\frac{\tau}{\tau_0}\cdot\frac{\sqrt{1-e^2}}{(1-e_0^2)^{\frac{3}{2}}}\cdot\Bigg\{\Bigg[\frac{3\sin i^2}{4} + \frac{5}{4}(1+\cos i^2)\cos 2g$$

$$+ \frac{5e^2\cos 2g - 2 - 3e^2}{4(1-e^2)}\cdot\cos i^2\Bigg]\sin(2g'+2v')$$

$$- \frac{5}{4}\left(\frac{e^2}{1-e^2}+2\right)\cos i\sin 2g\cos(2g'+2v')$$

$$+ \Bigg[\frac{3\sin i^2}{2} + \frac{5}{2}(1+\cos i^2)\cos 2g$$

$$+ \frac{5e^2\cos 2g - 2 - 3e^2}{2(1-e^2)}\cdot\cos i^2\Bigg]\cdot\frac{e_0}{6}\sin(2g'+3v')$$

$$+ \Bigg[\frac{3\sin i^2}{2} + \frac{5}{2}(1+\cos i^2)\cos 2g$$

$$+ \frac{5e^2\cos 2g - 2 - 3e^2}{2(1-e^2)}\cdot\cos i^2\Bigg]\cdot\frac{e_0}{2}\sin(2g'+v')$$

$$- \frac{5e_0}{12}\cdot\left(\frac{e^2}{1-e^2}+2\right)\cos i\sin 2g\cos(2g'+3v')$$

$$- \frac{5e_0}{4}\cdot\left(\frac{e^2}{1-e^2}+2\right)\cos i\sin 2g\cos(2g'+v')\Bigg\}$$

$$\Delta i = + \frac{3}{4} \cdot \frac{\tau}{\tau_0} \cdot \frac{1}{(1 - e_0^2)^{\frac{1}{2}}} \cdot \frac{\sin i}{(1 - e^2)^{\frac{1}{2}}} \Big\{ \Big[1 + \frac{3}{2} e^2 + \frac{5}{2} e^2 \cos 2g \Big] \frac{1}{2} \cos (2g' + 2v')$$

$$+ \frac{5}{4} e^2 \cos i \sin 2g \sin (2g' + 2v') + \frac{e_0}{6} \cdot \Big[1 + \frac{3}{2} e^2 + \frac{5}{2} e^2 \cos 2g \Big] \cos (2g' + 3v')$$

$$+ \frac{e_0}{2} \cdot \Big[1 + \frac{3}{2} e^2 + \frac{5}{2} e^2 \cos 2g \Big] \cos (2g' + v') + \frac{5}{12} e_0 e^2 . \cos i \sin 2g \sin (2g' + 3v')$$

$$+ \frac{5}{4} \cdot e_0 e^2 . \cos i \sin 2g \sin (2g' + v') \Big\}$$

$$\Delta \theta = + \frac{3}{4} \cdot \frac{\tau}{\tau_0} \cdot \frac{1}{(1 - e_0^2)^{\frac{1}{2}}} \cdot \frac{1}{(1 - e^2)^{\frac{1}{2}}} \cdot \Big\{ \Big[1 + \frac{3}{2} e^2 - \frac{5}{2} e^2 \cos 2g \Big] \cdot \frac{\cos i}{2} \sin (2g' + 2v')$$

$$+ \frac{5}{4} e^2 \sin 2g \cos (2g' + 2v') + \frac{e_0 \cos i}{6} \cdot \Big[1 + \frac{3}{2} e^2 - \frac{5}{2} e^2 \cos 2g \Big] \sin (2g' + 3v')$$

$$+ \frac{e_0 \cos i}{2} \cdot \Big[1 + \frac{3}{2} e^2 - \frac{5}{2} e^2 \cos 2g \Big] \sin (2g' + v')$$

$$+ \frac{5}{12} e_0 e^2 . \sin 2g \cos (2g' + 3v') + \frac{5}{4} e_0 e^2 . \sin 2g \cos (2g' + v') \Big\}$$

If we take the Julian year for the unit of time, and put

$$\tau = 79.331015 \text{ days.} \qquad \tau_0 = 10759.219817 \text{ days.}$$
$$\log e = 8.470851 \qquad \log e_0 = 8.748154$$

equations (A) give for the secular perturbations of Iapetus,

$$\begin{aligned}
\Delta a &= 0 \\
\Delta M &= - 502''.224 - 48''.855 \cos 2g \\
\Delta e &= + 48.791\, e \sin 2g \\
\Delta g &= + 440.379 + 48.299 \cos 2g \\
\Delta i &= - 0.145 \sin 2g \\
\Delta \theta &= - 234.891 + 0.513 \cos 2g
\end{aligned} \qquad \text{(D)}$$

Since the Saturnian system is so distant from us that small coefficients in the periodical perturbations will have no sensible influence on the position of the satellite, I

have neglected in these perturbations all coefficients smaller than 5″. In this way equations (C) give for the periodical perturbations the following values:

$$\Delta a = 0$$

$$\begin{aligned}\Delta M = &+ 154''. \sin(2g - 2g' - v') + 2752''. \sin(2g - 2g' - 2v') \\ &+ 51. \sin(2g - 2g' - 3v') - 9. \sin(2g' + v') \\ &- 160. \sin(2g' + 2v')\end{aligned}$$

$$\Delta e = + 4.5 \cos(2g - 2g' - v') + 81. \cos(2g - 2g' - 2v') \qquad \text{(E)}$$

$$\begin{aligned}\Delta g = &- 154. \sin(2g - 2g' - v') - 2750. \sin(2g - 2g' - 2v') \\ &- 51. \sin(2g - 2g' - 3v') - 26. \sin(2g' + v') \\ &- 460. \sin(2g' + 2v') - 9. \sin(2g' + 3v')\end{aligned}$$

$$\Delta i = + 9. \cos(2g' + v') + 162. \cos(2g' + 2v')$$

$$\begin{aligned}\Delta \theta = &+ 31. \sin(2g' + v') + 551. \sin(2g' + 2v') \\ &+ 10. \sin(2g' + 3v')\end{aligned}$$

The quantities in equations (D) and (E) are referred to the orbit of Saturn as the fundamental plane.

In computing the periodical perturbations, the terms depending on the position of the satellite in its orbit were omitted. But in order to see what effect these terms would have I have computed a couple of the larger ones. For the term independent of the eccentricity of the orbit of the satellite I find the inequality in the mean longitude,

$$\Delta E = -\frac{3}{2} \cdot \frac{n^2_0}{n^2} \cdot \cos\frac{1}{2} i^2 \sin 2(E - l' - g' - \theta)$$

or

$$\Delta E = -16''.5 \sin 2(E - l' - g' - \theta)$$

where l' is the mean anomaly of Saturn + 180°. This term may produce a change in the apparent position of the satellite amounting to a few hundredths of a second of arc as the maximum and can safely be neglected. If v be the true longitude of the

satellite, and r its radius vector, the principal terms depending on the first power of the eccentricity give the inequalities,

$$\Delta v = -\frac{15}{4} e \cdot \frac{n_0}{n} \sin (E - 2E_0 + P)$$

$$\frac{r \cdot \Delta r}{a^2} = +\frac{15}{8} e \cdot \frac{n_0}{n} \cos (E - 2E_0 + P)$$

or

$$\Delta v = -\ 168''.6 \sin (E - 2E_0 + P)$$

$$\frac{r \cdot \Delta r}{a^2} = +\ [0.000409] \cdot \cos (E - 2E_0 + P)$$

These periodical terms may therefore change the apparent position of the satellite by as much as half a second of arc, and strictly ought to be included in a comparison of the elements with observations. The effect of neglecting such terms will be to make the residual errors of the observations larger than a rigorous theory would give.

In order to complete this part of the subject the action of Jupiter on Iapetus was examined by means of the following formulæ. The plane of the orbit of Saturn being again taken as the plane of reference, the angle between this plane and the orbit of Jupiter is only $1^\circ\ 15'.4$. If we neglect, therefore, terms depending on $\sin \frac{1}{2} i^2$, the distance between the planets is

$$D = [r_1^2 + r_2^2 - 2r_1r_2 \cos (u_2 - u_1)]^{\frac{1}{2}}$$

where r_1 and r_2 are the radii vectores of the planets, and u_1 and u_2 are the angular distances of the planets from the intersection of their orbits. If, in this case, R_1 be the perturbative function, m' the mass of Jupiter, that of Saturn being unity, X', Y', Z' the heliocentric co-ordinates of Jupiter, and x', y', z' those of Saturn, we have,

$$R_1 = \frac{m' \cdot r^2}{2D^3} - \frac{3m' \cdot [X'x + Y'y + Z'z - x'x - y'y - z'z]^2}{2D^5}$$

Placing the axis of x in the intersection of the orbits of Jupiter and Saturn, and substituting the polar values of the rectangular co-ordinates, the value of R_1 takes the form,

$$R_1 = \frac{m' \cdot r^2}{2D^3} - \frac{3m' \cdot r^2}{2D^5} \cdot \Big\{ \frac{D^2}{2} + 2r_1r_2 \sin V_1 \sin V_2 \sin \tfrac{1}{2} J^2$$
$$+ \tfrac{1}{2} \Big[r_1^2 \cos 2V_1 + r_2^2 \cos 2V_2 - 2r_1r_2 \cos (V_1 + V_2) \Big]$$
$$+ 2r_1 \cdot \Big[r_1 \cos V_1 - r_2 \cos V_2 \Big] \cdot W \Big\}$$

where W is a quantity of the order $\sin i$. If we neglect terms divided by D^5 the perturbative function takes the very simple form,

$$R_1 = -\frac{m' \cdot r^2}{4D^3}.$$

If we substitute the non-periodic parts of r and D, we have,

$$R_1 = -\frac{m'a^2 \cdot \left(1 + \frac{3}{2}e^2\right)}{a^2_2 \cdot \left\{1 + \frac{a^2_1}{a^2_2} + \frac{3}{2}\left(\frac{a^2_1 e^2_1}{a^2_2} + e^2_2\right)\right\}^{\frac{3}{2}}}$$

From this form of R_1 it follows that the greatest secular perturbation of the elements will be in the longitude of the perisaturnium. From Lagrange's equations we have,

$$\frac{dP}{dt} = -\frac{an.\sqrt{1-e^2}}{e} \cdot \left(\frac{dR_1}{de}\right)$$

or

$$\frac{dP}{dt} = \frac{3m'.a^2.n\sqrt{1-e^2}}{a^2_2 \cdot \left\{1 + \frac{a^2_1}{a^2_2} + \frac{3}{2}\left(\frac{a^2_1 e^2_1}{a^2_2} + e^2_2\right)\right\}^{\frac{3}{2}}}$$

In this case we have, $m' = 3.3416$, and

$a_1 = 5.2028$	$a_2 = 9.53885$	$\log e_1 = 8.68340$
$a = 0.02379$	$\log e = 8.47085$	$\log e_2 = 8.74815$

and if we take the Julian year as the unit of time, the above formula gives,

$$\Delta P = +\ 0''.712$$

This small variation can be left out of consideration, especially since the action of the Ring and the figure of the planet will produce a much larger motion of the line of apsides, and one that can be determined only by observations.

The inequality of long period between Iapetus and Titan, pointed out by Plana, arises from the fact that five periods of Titan are nearly equal to one of Iapetus. This inequality will depend, therefore, on terms of the fourth order with respect to the eccentricities and inclination of the orbits. The formulæ for inequalities of this kind were published by Burckhardt in the Memoirs of the Paris Academy for 1808; and they are given also by Pontécoulant in the third volume of his *Théorie Analytique du Système du Monde.* Adopting the notation of Pontécoulant, and denoting by ω' and ω the longitudes of the perisaturnia of Iapetus and Titan, by Π the longitude of the intersection of their orbits, and by λ twice the sine of half the mutual inclination of their orbits, we put

$$\begin{aligned} P = &+ M^{(0)}e^4 \cos 4\omega + M^{(1)}e^3e' \cos(3\omega + \omega') + M^{(2)}e^2e'^2 \cos(2\omega + 2\omega') \\ &+ M^{(3)}ee'^3 \cos(\omega + 3\omega') + M^{(4)}e'^4 \cos 4\omega' + N^{(0)}e^2\lambda^2 \cos(2\omega + 2\Pi) \\ &+ N^{(1)}ee'\lambda^2 \cos(\omega + \omega' + 2\Pi) + N^{(2)}e'^2\lambda^2 \cos(2\omega' + 2\Pi) \end{aligned}$$

$$\begin{aligned} Q = &+ M^{(0)}e^4 \sin 4\omega + M^{(1)}e^3e' \sin(3\omega + \omega') + M^{(2)}e^2e'^2 \sin(2\omega + 2\omega') \\ &+ M^{(3)}ee'^3 \sin(\omega + 3\omega') + M^{(4)}e'^4 \sin 4\omega' + N^{(0)}e^2\lambda^2 \sin(2\omega + 2\Pi) \\ &+ N^{(1)}ee'\lambda^2 \sin(\omega + \omega' + 2\Pi) + N^{(2)}e'^2\lambda^2 \sin(2\omega' + 2\Pi) \end{aligned}$$

In this way the perturbative function becomes, for this case,

$$R = P \cos [5 (n't + \varepsilon') - (nt + \varepsilon)] + Q \sin [5 (n't + \varepsilon') - (nt + \varepsilon)]$$

If ζ' be the variation in the mean motion of Iapetus, we have

$$\zeta' = - 3a'n' . \iint d'R dt$$

and

$$d'R = \left(\frac{dR}{d\varepsilon'}\right) \cdot n' dt$$

From the above expression for R we find

$$\frac{dR}{d\varepsilon'} = - 5P \sin [5 (n't + \varepsilon') - (nt + \varepsilon)] + 5Q \cos [(5n't + \varepsilon') - (nt + \varepsilon)]$$

Substituting this value and integrating, we have

$$\zeta' = - \frac{15a'n'^2 . P}{(5n' - n)^2} \cdot \sin [5 (n't + \varepsilon') - (nt + \varepsilon)]$$

$$+ \frac{15a'n'^2 . Q}{(5n' - n)^2} \cdot \cos [5 (n't + \varepsilon') - (nt + \varepsilon)]$$

The labor of determining the coefficients consists in computing the values of P and Q. For the values of the M and N coefficients, we have, by putting $i = 5$, in the expressions of Pontécoulant,

$$a'M^{(0)} = + \frac{m}{384} \cdot \left\{ + 1045 . b_{\frac{1}{2}}^{(5)} + 916 . \alpha \frac{db_{\frac{1}{2}}^{(5)}}{d\alpha} + 258 . \alpha^2 \frac{d^2 b_{\frac{1}{2}}^{(5)}}{d\alpha^2} + 28 . \alpha^3 \frac{d^3 b_{\frac{1}{2}}^{(5)}}{d\alpha^3} + \alpha^4 \frac{d^4 b_{\frac{1}{2}}^{(5)}}{d\alpha^4} \right\}$$

$$a'M^{(1)} = - \frac{m}{96} \cdot \left\{ + 1224 . b_{\frac{1}{2}}^{(4)} + 1066 . \alpha \frac{db_{\frac{1}{2}}^{(4)}}{d\alpha} + 291 . \alpha^2 \frac{d^2 b_{\frac{1}{2}}^{(4)}}{d\alpha^2} + 30 . \alpha^3 \frac{d^3 b_{\frac{1}{2}}^{(4)}}{d\alpha^3} + \alpha^4 \frac{d^4 b_{\frac{1}{2}}^{(4)}}{d\alpha^4} \right\}$$

$$a'M^{(2)} = + \frac{m}{64} \cdot \left\{ + 1407 . b_{\frac{1}{2}}^{(3)} + 1228 . \alpha \frac{db_{\frac{1}{2}}^{(3)}}{d\alpha} + 326 . \alpha^2 \frac{d^2 b_{\frac{1}{2}}^{(3)}}{d\alpha^2} + 32 . \alpha^3 \frac{d^3 b_{\frac{1}{2}}^{(3)}}{d\alpha^3} + \alpha^4 \frac{d^4 b_{\frac{1}{2}}^{(3)}}{d\alpha^4} \right\}$$

$$a'M^{(3)} = - \frac{m}{96} \cdot \left\{ + 1556 . b_{\frac{1}{2}}^{(2)} + 1396 . \alpha \frac{db_{\frac{1}{2}}^{(2)}}{d\alpha} + 363 . \alpha^2 \frac{d^2 b_{\frac{1}{2}}^{(2)}}{d\alpha^2} + 34 . \alpha^3 \frac{d^3 b_{\frac{1}{2}}^{(3)}}{\alpha^3} + \alpha^4 \frac{d^4 b_{\frac{1}{2}}^{2)}}{d\alpha^4} \right\}$$

$$a'M^{(4)} = + \frac{m}{384} \cdot \left\{ + 1569 . b_{\frac{1}{2}}^{(1)} + 1556 . \alpha \frac{db_{\frac{1}{2}}^{(1)}}{d\alpha} + 402 . \alpha^2 \frac{d^2 b_{\frac{1}{2}}^{(1)}}{d\alpha^2} + 36 . \alpha^3 \frac{d^3 b_{\frac{1}{2}}^{(1)}}{d\alpha^3} + \alpha \frac{d^4 b_{\frac{1}{2}}^{(4)}}{d\alpha^4} \right\}$$

$$a'N^{(0)} = + \frac{m\alpha}{32} \cdot \left\{ + 31 . b_{\frac{1}{2}}^{(4)} + 12 . \alpha \frac{db_{\frac{1}{2}}^{(4)}}{d\alpha} + \alpha^2 \frac{d^2 b_{\frac{1}{2}}^{(4)}}{d\alpha^2} \right\}$$

$$a'N^{(1)} = - \frac{m\alpha}{16} \cdot \left\{ + 50 . b_{\frac{1}{2}}^{(3)} + 16 . \alpha \frac{db_{\frac{1}{2}}^{(3)}}{d\alpha} + \alpha^2 \frac{d^2 b_{\frac{1}{2}}^{(3)}}{d\alpha^2} \right\}$$

$$a'N^{(2)} = + \frac{m\alpha}{32} \cdot \left\{ + 85 . b_{\frac{1}{2}}^{(2)} + 20 . \alpha \frac{db_{\frac{1}{2}}^{(2)}}{d\alpha} + \alpha^2 \frac{d^2 b_{\frac{1}{2}}^{(2)}}{d\alpha^2} \right\}$$

The computation of the $b^{(i)}_{\frac{1}{2}}$ quantities and their derivatives with respect to α was made several years ago by Mr. A. Hall, jr., using Bessel's elements of Titan and Tisserand's elements of Iapetus. These give

$$\alpha = \frac{a}{a'} = 0.3432354$$

$$b^{(1)}_{\frac{1}{2}} = 0.359621 \qquad \alpha \cdot \frac{db^{(1)}_{\frac{1}{2}}}{d\alpha} = 0.395072$$

$$b^{(2)}_{\frac{1}{2}} = 0.093063 \qquad \alpha \cdot \frac{db^{(2)}_{\frac{1}{2}}}{d\alpha} = 0.196346$$

$$b^{(3)}_{\frac{1}{2}} = 0.026689 \qquad \alpha \cdot \frac{db^{(3)}_{\frac{1}{2}}}{d\alpha} = 0.083152$$

$$b^{(4)}_{\frac{1}{2}} = 0.008029 \qquad \alpha \cdot \frac{db^{(4)}_{\frac{1}{2}}}{d\alpha} = 0.033070$$

$$b^{(5)}_{\frac{1}{2}} = 0.002483 \qquad \alpha \cdot \frac{db^{(5)}_{\frac{1}{2}}}{d\alpha} = 0.012715$$

$$\alpha^2 \cdot \frac{d^2b^{(1)}_{\frac{1}{2}}}{d\alpha^2} = 0.118091 \qquad \alpha^3 \cdot \frac{d^3b^{(1)}_{\frac{1}{2}}}{d\alpha^3} = 0.183635$$

$$\alpha^2 \cdot \frac{d^2b^{(2)}_{\frac{1}{2}}}{d\alpha^2} = 0.240777 \qquad \alpha^3 \cdot \frac{d^3b^{(2)}_{\frac{1}{2}}}{d\alpha^3} = 0.156742$$

$$\alpha^2 \cdot \frac{d^2b^{(3)}_{\frac{1}{2}}}{d\alpha^2} = 0.182826 \qquad \alpha^3 \cdot \frac{d^3b^{(3)}_{\frac{1}{2}}}{d\alpha^3} = 0.257312$$

$$\alpha^2 \cdot \frac{d^2b^{(4)}_{\frac{1}{2}}}{d\alpha^2} = 0.105291 \qquad \alpha^3 \cdot \frac{d^3b^{(4)}_{\frac{1}{2}}}{d\alpha^3} = 0.243997$$

$$\alpha^2 \cdot \frac{d^4b^{(5)}_{\frac{1}{2}}}{d\alpha^2} = 0.053082 \qquad \alpha^3 \cdot \frac{d^3b^{(5)}_{\frac{1}{2}}}{d\alpha^3} = 0.173643$$

$$\alpha^4 \cdot \frac{d^4b^{(1)}_{\frac{1}{2}}}{d\alpha^4} = 0.250154$$

$$\alpha^4 \cdot \frac{d^4b^{(2)}_{\frac{1}{2}}}{d\alpha^4} = 0.292799 \qquad b^{(2)}_{\frac{3}{2}} = 0.550624$$

$$\alpha^4 \cdot \frac{d^4b^{(3)}_{\frac{1}{2}}}{d\alpha^4} = 0.280469 \qquad b^{(3)}_{\frac{3}{2}} = 0.218765$$

$$\alpha^4 \cdot \frac{d^4b^{(4)}_{\frac{1}{2}}}{d\alpha^4} = 0.401016 \qquad b^{(4)}_{\frac{3}{2}} = 0.084074$$

$$\alpha^4 \cdot \frac{d^4b^{(5)}_{\frac{1}{2}}}{d\alpha^4} = 0.428671$$

$$\alpha \cdot \frac{db_{\frac{3}{2}}^{(2)}}{d\alpha} = 1.360625 \qquad \alpha^2 \cdot \frac{d^2b_{\frac{3}{2}}^{(2)}}{d\alpha^2} = 2.593876$$

$$\alpha \cdot \frac{db_{\frac{3}{2}}^{(3)}}{d\alpha} = 0.755674 \qquad \alpha^2 \cdot \frac{d^2b_{\frac{3}{2}}^{(3)}}{d\alpha^2} = 2.081598$$

$$\alpha \cdot \frac{db_{\frac{3}{2}}^{(4)}}{d\alpha} = 0.373627 \qquad \alpha^2 \cdot \frac{d^2b_{\frac{3}{2}}^{(4)}}{d\alpha^2} = 1.372003$$

Taking the mass of Saturn for unity, and the mass of Titan near the limit assigned by Tisserand, or

$$m = \frac{1}{10000},$$

we have the following values of the M and N quantities:

$$\log a'M^{(0)} = 4.937164 \qquad \log N^{(0)} = 4.957906$$

$$\log a'M^{(1)} = 5.939103n \qquad \log N^{(1)} = 5.731330n$$

$$\log a'M^{(2)} = 6.511422 \qquad \log N^{(2)} = 5.914724$$

$$\log a'M^{(3)} = 6.726939n$$

$$\log a'M^{(4)} = 7.838650n$$

For the epoch 1874.0 we have,

$$\varpi = 265^\circ\ 35' \qquad \varpi' = 348^\circ\ 0'$$

$$e = 0.029223 \qquad e' = 0.02957$$

$$\Pi = 202^\circ\ 43'.1$$

$$J = 13^\circ\ 16'.0$$

$$\log \lambda^2 = 8.72742$$

$$\delta' \doteq + 39''.2 \sin (5E' - E + 102^\circ\ 41'.0)$$

This inequality in the mean motion of the satellite will have a period of eight and three-quarter years, but its influence on observations is hardly sensible. A large part of the coefficient is produced by the terms depending on λ^2. From the action of Titan on Hyperion, Professor Newcomb has found the mass of Titan smaller than the value adopted in the preceding computation, and this mass will make the coefficient of the inequality still smaller.

§ 7. Returning now to the elements, and reducing each set to a mean epoch, we have the results given below. In this reduction the mean motion of the satellite in a Julian year, or in 365¼ days, has been assumed to be

$$4 \text{ Revolutions} + 217^\circ\ 29'\ 7''.4645$$

Only the reduction for precession has been applied to the longitude of the perisaturnium; but for the node and inclination the additional yearly changes have been applied of

$$\Delta N = -\ 0'.676; \qquad \Delta J = +\ 0'.668.$$

Results from Right Ascension and Declination.

Epoch, 1876, Sept. 20.5, Greenwich m. t.

	E	P	N	J
	° ′ ″	° ′ ″	° ′ ″	° ′ ″
1875	7 36.13 ± 0.61	348 26.29 ± 16.16	53 13.47 ± 1.57	14 2.47 ± 0.59
1876	7 35.82 ± 0.68	350 7.18 ± 13.72	53 12.66 ± 1.83	14 0.19 ± 0.62
1877	7 35.34 ± 0.64	350 26.69 ± 9.10	53 9.06 ± 1.85	14 1.77 ± 0.59

	a	*e*
	″ ″	
1875	515.594 ± 0.0559	0.02758 ± 0.000 21
1876	515.454 ± 0.0583	0.02831 ± 0.000 30
1877	515.517 ± 0.0526	0.02982 ± 0.000 26

Results from Angle of Position and Distance.

Epoch, 1880, March 17.0, Greenwich m. t.

	E	P	N	J
	° ′ ″	° ′ ″	° ′ ″	° ′ ″
1875–'78	26 42.48 ± 0.40	354 8.35 ± 9.58	53 21.88 ± 2.48	14 0.50 ± 0.48
1878–'81	26 45.17 ± 0.61	353 46.36 ± 12.65	53 24.09 ± 3.25	13 57.40 ± 0.85
1883–'84	26 43.03 ± 0.51	351 25.37 ± 24.95	52 31.90 ± 2.31	14 1.43 ± 0.65

	a	*e*
	″ ″	
1875–'78	515.585 ± 0.067	0.02798 ± 0.000 21
1878–'81	515.905 ± 0.132	0.02771 ± 0.000 20
1883–'84	515.289 ± 0.076	0.02708 ± 0.000 07

Reducing each set to a single system we have,

Epoch, 1876, Sept. 20.5, Greenwich m. t.

$$\left.\begin{array}{l} E = 7^\circ\ 35'.77 \pm 0'.37 \\ P = 350\ \ 0.07 \pm 6.87 \\ N = 53\ \ 11.93 \pm 1.00 \\ J = 14\ \ 1.52 \pm 0.35 \end{array}\right\} \text{App. equinox of epoch.}$$

$$a = 515''.523 \pm 0''.0320$$

$$e = 0.02843 \pm 0.00014$$

Epoch, 1880, March 17.0, Greenwich m. t.

$$\left.\begin{array}{lrrr} & ° & ' & '' \\ E = & 26 & 43.21 & \pm 0.28 \\ P = & 353 & 46.98 & \pm 7.30 \\ N = & 53 & 1.29 & \pm 1.50 \\ J = & 14 & 0.24 & \pm 0.35 \end{array}\right\} \text{App. equinox of epoch.}$$

$$\begin{array}{lrl} & '' & '' \\ a = & 515.512 & \pm 0.0470 \\ e = & 0.02722 & \pm 0.00006 \end{array}$$

Transferring these elements to the ecliptic, and referring them to the mean equinox at the beginning of the year, we have,

Epoch, 1876, September 20.5, Greenwich m. t.

$$\left.\begin{array}{lrrr} & ° & ' & '' \\ E = & 7 & 35 & 9.8 \\ P = & 349 & 59 & 27.8 \\ n = & 142 & 30 & 11.7 \\ i = & 18 & 35 & 41.1 \end{array}\right\} \text{Mean equinox, 1876.0}$$

$$\begin{array}{lrl} & '' & '' \\ a = & 515.523 & \pm 0.0320 \\ e = & 0.02843 & \end{array}$$

These elements result from the observed differences of right ascension and declination in the oppositions of 1875, 1876, and 1877. The following are those found from the angles of position, and the distances observed from 1876 to 1884.

Epoch, 1880, March 17.0, Greenwich m. t.

$$\left.\begin{array}{lrrr} & ° & ' & '' \\ E = & 26 & 43 & 2.0 \\ P = & 353 & 46 & 48.2 \\ n = & 142 & 34 & 23.6 \\ i = & 18 & 33 & 2.3 \end{array}\right\} \text{Mean equinox 1880.0.}$$

$$\begin{array}{lrl} & '' & '' \\ a = & 515.512 & \pm 0.0470 \\ e = & 0.02722 & \end{array}$$

The perturbations of the satellite given by the equations (D) and (E) are referred to the orbit of the planet. In order to transfer them to the ecliptic we need the following quantities: Let i' and θ' be the inclination and node of the orbit of Saturn on the ecliptic; let ψ and φ be the sides of the spherical triangle from the nodes on the eclip-

tic to the intersection of the orbits of the planet and satellite, and J the mutual inclination of these orbits. We have, for the above epochs:

1876.		1880.	
	° ′ ″		° ′ ″
$i' =$	2 29 36.1	$i' =$	2 29 35.6
$\theta' =$	112 34 52.0	$\theta' =$	112 36 41.4
$\psi =$	34 7 4.1	$\psi =$	34 9 57.3
$\varphi =$	4 23 19.5	$\varphi =$	4 24 14.7
J =	16 28 45.2	J =	16 26 10.4

1876.		1880.	
	° ′		° ′
$g =$	203 6 0	$g =$	206 48.2
$g' =$	303 56.3	$g' =$	303 55.6
$v' =$	64 50.3	$v' =$	107 16 7

Computing the periodical perturbations by equations (E), we have:

1876.		1880.	
	″		″
$\Delta E =$	+ 23.7	$\Delta E =$	− 204.3
$\Delta P =$	− 1377.6	$\Delta P =$	+ 1911.7
$\Delta n =$	+ 174.5	$\Delta n =$	+ 462.2
$\Delta i =$	+ 156.8	$\Delta i =$	− 37.2
$\Delta e =$	+ 70.8	$\Delta e =$	+ 55.7

The mean elliptic elements are, therefore,

1876.		1880.	
	° ′ ″		° ′ ″
E =	7 34 46.1	E =	26 46 26.3
P =	350 22 25.4	P =	353 14 56.5
$n =$	142 27 17.2	$n =$	142 26 41.4
$i =$	18 33 4.3	$i =$	18 33 39.5
	″ ″		″ ″
$a =$	515.523 ± 0.0320	$a =$	515.512 ± 0.0470
$e =$	0.028087	$e =$	0.026950

The secular perturbations of these elements are as follows, the unit of time being a Julian year:

$$\begin{aligned}
\Delta E &= -\ 242.416'' - 0.163'' \cos 2g \\
\Delta P &= +\ 259.808 + 48.693 \cos 2g \\
\Delta n &= -\ 208.344 + 0.455 \cos 2g \\
\Delta i &= +\ 4.990 - 0.011 \cos 2g \\
\Delta e &= \qquad\qquad + 48.791,\ e \sin 2g
\end{aligned}$$

These expressions for the secular perturbations have been found from the disturbing force of the sun alone, the actions of the other satellites, of the Ring, and of the figure of the planet having been neglected. Hence the above numerical values must be somewhat uncertain; and there is no way to find the neglected forces except from observation, and good determinations of the elements at two or more distant epochs. The figure of Saturn is more elliptical than that of any other planet, and probably the action of this figure on the three exterior satellites is as great as that of the Ring. If we assume the figure of the planet to be an ellipsoid of revolution, and denote by ρ its ellipticity, by φ the ratio of centrifugal force to gravity at the equator of the planet, by B the radius of this equator, by m the mass of the planet, and by μ the sine of the declination of the satellite relatively to the same equator, we shall have

$$V = \frac{mB^2}{r^3} \cdot \left(\frac{\varphi}{2} - \rho\right) \cdot \left(\mu^2 - \frac{1}{3}\right)$$

Mec. Cel. Tome II, p. 103, — V will be the term to be added to the perturbative function in order to take account of the figure of the planet. Putting

$$k = \frac{3S \cdot a^3}{4a_0^3 (1 - e_0^2)^{\frac{3}{2}}} \cdot n, \quad \text{and } k' = \frac{\left(\rho - \frac{\varphi}{2}\right)}{a^2} \cdot n;$$

I have found that the secular motions of the inclination and node of Iapetus on the orbit of Saturn, which are produced by the figure of the planet, will be, in a Julian year,

$$\Delta i = - \quad 45''.250 \cdot \frac{k'}{k}$$

$$\Delta \theta = + \quad 117.827 \cdot \frac{k'}{k}$$

We have also

$$\frac{k'}{k} = \frac{4}{3} \cdot \frac{a_0^3}{a^3 S} \cdot \frac{1}{a^2} \cdot (1 - e_0^2)^{\frac{3}{2}} \cdot \left(\rho - \frac{\varphi}{2}\right).$$

This ratio, therefore, varies inversely as the fifth power of the mean distance of the satellite. The factor $\rho - \frac{\varphi}{2}$ is not known very exactly, but probably the ratio $\frac{k'}{k}$ is between $\frac{1}{5}$ and $\frac{1}{3}$ in the case of Iapetus. Since the action of the Ring and of the satellites must be neglected, the actual secular perturbations must remain unknown until developed by future observations.

§ 8. The old observations of Iapetus that can be used for testing and determining the periodic time of the satellite are two conjunctions, observed by the elder Cassini in March and May, 1685; the observations near conjunction in May, 1714, by Jacques Cassini; the observations of Bernard, at Marseilles, in 1787, and those of Sir William Herschel, on September 20, 1789. The observations of 1685 and 1714 are published by Jacques Cassini, in the Memoirs of the Paris Academy for 1714. These are simply drawings of the positions of the satellite and of its apparent orbit. In 1685 the position of the satellite is put down on March 29 and 31, and between these days the satellite passed its superior conjunction. The positions are also given for May 7 and 10, and between these days it passed its inferior conjunction. In 1714 the apparent orbit was extremely eccentric. Cassini gives the position of the satellite for May 2, 3, 4, and 5. At this time it was approaching its superior conjunction, and from the drawing the apparent orbit passed nearly through the center of the planet. These observations may be used by estimating from the positions given on successive days the times of the conjunctions. This can be done, of course, only in a rough manner, but the great interval of time that has elapsed may give some value to such observations. The estimated times of these conjunctions are as follows:

	h.	m.		
1685, March 30,	17	0,	Paris m. t.,	superior conjunction.
1685, May 8,	17	20,	" "	inferior conjunction.
1714, May 6,	18	45,	" "	superior conjunction.

Bernard's observation of August 23, 1787, was made near conjunction, and from this observation, and the preceding ones, Lalande infers that the satellite was in superior conjunction at

1787, August 24, $1^h\ 7^m$, Paris m. t.

Sir William Herschel observed Iapetus, 1789, September 20, as follows:

"$1^h\ 28^m$, with a power of 240, perfectly central. With 300, perfectly central (S)." Herschel concludes that at $13^h\ 18^m\ 13^s$, m. t., the satellite was "directly at rectangles to the ring, to the north." This would correspond to $13^h\ 20^m\ 27^s$, Greenwich m. t. Herschel's observation is the only one of these that can be considered accurate.

As the old ephemerides do not give very exactly the positions of Saturn for the above epochs, the geocentric right ascensions and declinations of the planet and its distance from the earth have been computed from Leverrier's tables of Saturn, and

Hansen's and Olufsen's tables of the Sun. The positions are for Paris mean noon. These computations were made for me several years ago by Dr. C. Powalky.

Geocentric Positions of Saturn.

Date.	α			δ			log Distance.
	°	′	″	°	′	″	
1685. Mar. 28	164	15	10.4	+ 9	8	30.9	0.92871
29	164	11	25.5	9	9	59.4	
30	164	7	43.9	9	11	26.3	0.92950
31	164	4	5.7	9	12	51.5	
April 1	164	0	30.9	+ 9	14	15.0	0.93034
May 7	162	46	13.6	+ 9	45	0.3	0.95245
8	162	45	45.5	9	44	59.9	0.95319
9	162	45	23.2	9	44	57.0	0.95394
10	162	45	6.8	+ 9	44	51.6	0.95469
1714. May 6	157	3	47.1	+ 11	43	29.5	0.95253
7	157	3	44.2	11	43	21.4	
8	157	3	47.4	+ 11	43	11.0	0.95406
1787. Aug. 20	328	8	46.7	− 14	32	39.9	0.94499
22	328	0	2.4	14	35	50.5	
24	327	51	19.9	14	38	59.2	0.94521
26	327	42	40.3	14	42	5.8	
28	327	34	4.5	− 14	45	9.9	0.94566
1789. Sept. 18	351	9	34.1	− 6	23	31.9	0.93472
19	351	5	19.3	6	25	22.1	
20	351	1	5.8	6	27	10.9	0.93489
21	350	56	53.6	6	28	58.4	
22	350	52	42.7	− 6	30	44.5	0.93517

Besides the old observations of this satellite, the following, made during the present century, may be used for determining the period: The observations of Sir John Herschel at the Cape of Good Hope in 1837, the observations of Mr. Lassell in 1850, and those of Captain Jacob, at Madras, in 1857 and 1858. Captain Jacob has discussed his own observations and his results have been already given.

In order to get a value of the mean longitude for 1850 that could be used in determining the period of the satellite, the observations made by Mr. Lassell in 1850 were compared with elements by Lieutenant Allen, equations of condition were computed according to the form (α), p. 22, and corrections to the assumed elements were found by the method of least squares. The resulting elements are the following:

Epoch, 1850, Nov. 8.5, Greenwich m. t.

$$E = 332^\circ\ 48'.02 \pm 8'.23$$
$$P = 341\ 36.61 \pm 227.48$$
$$N = 52\ 48.64 \pm 42.24$$
$$J = 13\ 49.60 \pm 9\ 34$$

$$a = 508''.082 \pm 1''.504$$
$$e = 0.02897 \pm 0.00356$$

The probable error of a single equation is $\pm 4''.26$, and the residuals are as follows:

Residuals.

Date.	$\Delta\alpha$	$\Delta\delta$	Date.	$\Delta\alpha$	$\Delta\delta$
1850.	″	″	1850.	″	″
Sept. 11	− 3.41	− 4.90	Nov. 8	+ 2.23	+ 0.01
12	−10.15	. .	14	+ 3.62	+ 4.77
Oct. 5	− 3.17	+ 0.33	16	+ 7.22	+ 3.47
9	+ 2.03	− 2.32	21	+ 3.09	+ 8.29
10	− 2.69	− 1.52	Dec. 11	−10.89	+ 2.31
11	+ 3.26	+ 0.05	12	− 6.29	+ 2.19
21	− 4.22	+ 5.19	19	+ 1.31	+ 8.82
23	− 7.59	− 3.00	21	+ 6.49	+ 0.81
Nov. 2	−15.19	+ 7.05	24	+ 9.83	− 3.92

These observations, therefore, are rough, and the position of the satellite in its orbit cannot be found from them with much accuracy.

In order to determine from the observations and the preceding elements the periodic time of the satellite and the secular variations of the elements, I have proceeded as follows. By comparing the recent elements with some of the old observations approximate values of the annual variations of the node and inclination were found. By means of these values Herschel's observation of 1789 was compared with the conjunctions observed in 1880 and 1881, and the periodic time, omitting the periodical perturbations, was found to be

$$\tau = 79.3310152 \text{ days.}$$

With this period a new comparison with the old observations gave for the annual variations of the node and inclination on the ecliptic,

$$\Delta i = -\ 10''.80; \qquad \Delta n = -\ 126''.00.$$

Assuming as epoch 1880, March 17.0, and the longitude of the perisaturnium for the

epoch as 352° 0′, another comparison of the old observations gave for the annual variation of the longitude of the perisaturnium, + 86″.28. Having now obtained approximate values of the periodic time and of the variations of the elements, all the old observations and the recent elements were compared with the elements assumed for the epoch, and the periodical perturbations of the mean anomaly were computed. The results are given in the following table. The first column gives the observer; the next two the date and phenomenon; the fourth the perturbation of the mean anomaly; and then follow the computed and observed values of this anomaly, with the differences corrected for the perturbation. The position of Sir John Herschel depends on three angles of position observed on April 27, 28, 28, 1837, near conjunction. The last column gives the number of revolutions from the epoch.

Observer.	Date.	Phenomenon.	Perturbation of M.	Computed M.	Observed M.	Difference.	No. of Revs.
			′	° ′	° ′	° ′	
J. D. Cassini . . .	1685	Conjunction . . .	+ 3.91	172 56.30	172 0.60	+ 0 59.61	897.61
J. D. Cassini . . .	1685	Conjunction . . .	+ 1.73	350 7.07	351 38.22	− 1 29.42	897.12
Jacques Cassini . .	1714	Conjunction . . .	+ 11.69	162 51.43	165 13.08	− 2 9.96	763.64
Bernard	1787	Conjunction . . .	+ 37.75	334 49.40	336 15.63	− 0 48.48	426.16
W. Herschel . . .	1789	Angle of Position .	+ 0.61	176 52.87	176 52.87	+ 0 0.61	416.60
J. Herschel. . . .	1837	Angle of Position .	− 47.56	232 52.05	232 59.70	− 0 55.21	197.45
Lassell.	1850	Elements.	− 38.02	351 7.36	341 30.23	+ 8 59.11	135.15
Jacob	1858	Elements.	+ 41.56	302 53.43	303 0.54	+ 0 34.45	102.26
Newcomb	1874	Elements.	+ 48.78	47 18.96	47 14.79	+ 0 52.95	24.97
Hall.	1876	Elements.	+ 23.35	15 38.65	15 40.80	+ 0 21.20	16.05
Hall.	1880	Elements.	− 35.27	34 43.21	34 43.21	− 0 35.27	0.00

In the case of the first three of the above positions, in order to get the observed value, the times of conjunction were estimated from the statements of the observers, and are given above. The corresponding angles of position were 0°, 180°, and 0°. For Bernard's observations this angle is 0°. From these angles the true anomalies were computed, and thence the mean. W. Herschel's observation depends on the position of the Ring, and this has been computed from Bessel's last elements; unlike the other old observations, this is a clear and definite statement, and the time is given exactly. The differences of the mean anomaly are some of them large, and it is possible that the times of conjunction for the three oldest observations may not have been correctly inferred from the descriptions and drawings published by Jacques Cassini. It must be remembered that these descriptions do not pretend to an accurate statement of the time. In the case of Lassell's elements the difference would be made small by using the longitude of the perisaturnium found with these elements, although this longitude seems to be erroneous. Generally the mean anomaly is affected with any error that may exist in the position of the line of apsides, and if this position and the mean longitude be determined together the place of the satellite in its orbit will not be changed much. Thus Captain Jacob found from two long series of observations a difference of 4° 10′ in the longitude of the perisaturnium. This result follows

from the nature of the orbit in which the eccentricity is small. It is difficult by means of the old observations to separate the annual motion of the perisaturnium very accurately from any small error that may still exist in the mean motion of the satellite, but on the whole it appears that the elements are now determined with a good degree of approximation. But since the periodical perturbations of the mean longitude are small, I have formed the following table, which gives a comparison of the mean longitudes that have been determined from the different series of observations with the mean longitude at the epoch.

Observer.	Date.	Perturbation of E.	Computed E.	Observed E.	Difference.	Revs.
		′	° ′	° ′ ″	′	
Lassell.	1850	− 3.35	332 28.38	332 47.30 ± 8.23	− 22.27	135.15
Jacob	1858	+ 3.33	294 24.72	294 28.60 ± 1.68	− 0.55	102.26
Newcomb	1874	+ 2.87	39 13.26	39 6.33 ± 3.13	+ 9.80	24.97
Hall.	1876	+ 0.39	7 35.81	7 35.16 ± 0.37	+ 1.04	16.05
Hall.	1880	− 3.41	26 46.44	26 43.03 ± 0.28	0.00	0.00

Of these results the comparison with Captain Jacob's position is best suited for a good determination of the periodic time, and here the difference is less than one third the probable error of the observed position. I have, therefore, attempted no further correction of this element.

Adopted Elements of Iapetus.

Epoch, 1880, March 17.0, Greenwich m. t.

Mean Longitude at Epoch, $E = 26^\circ\ 46'\ 26''.3$

Longitude of Perisaturnium, $P = 353\ 14\ 56.5 + 86''.28\,t$

Node on Ecliptic, $n = 142\ 26\ 41.4 - 126.00\,t$

Inclination to Ecliptic, $i = 18\ 33\ 39.5 - 10.80\,t$

} Mean equinox, 1880.0.

Mean Distance, $a = 515''.5195 \pm 0''.02645$

Eccentricity, $e = 0.027795$

Periodic Time $= 79.3310152$ mean solar days.

Motion in a Julian year $= 4$ Revolutions $+ 217^\circ\ 29'\ 7''.4645$

Mean daily Motion $= 4^\circ.53794773$ [log $= 0.6568595$]

In the annual variations of P, n, and i which are given above the coefficients include the changes for precession; t denotes the number of years from 1880.0.

§ 9. We have now to compute the mass of the planet from the periodic time of

the satellite and its mean distance. Assuming that the figure of the planet is an ellipsoid of revolution, the expression for its attraction on an external particle will be

$$\frac{M}{r^2} \cdot \left\{ 1 + \frac{B^2}{a^2} \left(\rho - \frac{1}{2} \varphi \right) \right\}$$

Mec. Cel., Tome II, art. 35. M is the mass of the planet, r the distance of the point from the center of the planet, B the equatorial radius of the planet, and a the mean distance of the satellite; ρ is the ellipticity of the figure of the planet, and φ denotes the ratio of the centrifugal force to gravity at the equator of the planet. In this expression the mass of the satellite is necessarily neglected, since we have no knowledge of it. If t and T designate the periodic times of the satellite and the earth, and m the mass of the earth, and if we put

$$a = D \sin h$$

where D is the mean distance of Saturn from the sun, we have, by Kepler's third law,

$$M = \frac{T^2}{t^2} \cdot \frac{D^3 \sin h^3}{1 + \frac{B^2}{a^2} \left(\rho - \frac{1}{2} \varphi \right)} \cdot (1 + m)$$

Here M denotes the mass of the entire system of Saturn, including the planet, its Ring, and satellites. Bessel has given a determination of the mass of the Ring from the motion of the line of apsides of the orbit of Titan, for which he found 1744″.699 in a year. This motion he ascribes entirely to the action of the Ring, and finds for its mass $\frac{1}{118}$ of the mass of Saturn. But this value is probably much too great, since the action of the satellites and that arising from the figure of the planet, which were neglected, would exert an influence in the same direction as the Ring. The mass of this singular body needs a new determination before it can be used with certainty. Nothing is known of the masses of the satellites, except that of Titan, and what may be inferred by comparison of magnitudes with this large satellite. Probably the motion of Hyperion will give after a few years a good determination of the mass of Titan. The quantity $\rho - \frac{1}{2} \varphi$ in the case of Iapetus is multiplied by the small factor $\frac{B^2}{a^2}$, and on this account it has but little influence on the values of the mass. For Saturn I find

$$\rho - \frac{1}{2} \varphi = 0.01818,$$

and we have the following values of the quantities for computing M:

$$\begin{aligned} T &= 365.2563744 \text{ days} \\ t &= 79.3310152 \quad \text{"} \\ D &= 9.53885 \\ h &= 515''.5195 \pm 0''.02645 \\ 1 + m &= 1.0000030822 \\ 1 + \frac{B^2}{a^2}\left(\rho - \tfrac{1}{2}\varphi\right) &= 1.0000051030 \end{aligned}$$

From these values we have

$$\textit{Mass of Saturn} = \frac{1}{3481.3 \pm 0.54}$$

The chief source of uncertainty in this determination of the mass of the planet lies in the value of the mean distance, or in the quantity denoted above by h. Although the probable error of this quantity is small, it may be affected by a constant error that would sensibly change the result. But, on the other hand, it will be noticed that the values of h determined by the two different methods of observing, one by differences of right ascension and declination and the other by angles of position and distances, agree remarkably well. This agreement may be partly accidental, but it indicates that the work is harmonious, and diminishes the chance of constant errors. Still, on account of its Ring, this planet is a difficult object to deal with by means of a filar micrometer, and it must be confessed that for this reason there is some probability of a constant error remaining in the result. Another source of constant error in the mean distance lies in the value of a revolution of the screw of the micrometer used in the reductions, since an error in the revolution is multiplied by the large factor 52. The value of a revolution has been taken as

$$R = 9''.9479 \pm 0''.00075,$$

and no corrections have been applied for temperature. The coefficient for temperature is now proved to be very small, and considering the average temperature at which the observations were made, I think this coefficient can have no sensible influence on the result. The above value of a revolution of the screw has been found from such an extensive series of observations that it must be nearly correct. In solving the equations of condition double weight was given to the distances, and the residuals indicate that the relative weight of the equations depending on the distances should be still greater; but this would change the result very little, as a trial has shown. The probable errors of the observations show that the method of differences of right ascension and declination is a better one for this satellite than that by angle of position and distance. When the Ring has closed up, so as to show the Ball of the planet on both sides, I intend to make another series of observations by the first method.

In order to ease computations on this satellite, some tables of its motion are appended. They have been computed from the elements given above, and are referred to the ecliptic.

OCTOBER 24, 1885.

Tables of the Motion of Iapetus.

Year.	Longitude.			Perisaturnium.			Node.			Inclination.		
	°	′	″	°	′	″	°	′	″	°	′	″
1875	31	3	34.0	353	7	45.1	142	37	11.4	18	34	33.5
1876	251	56	53.9		9	11.4		35	5.4		34	22.7
1877	108	17	57.2		10	37.7		32	59.4		34	11.9
1878	324	39	0.6		12	3.9		30	53.4		34	1.1
1879	181	0	3.9		13	30.2		28	47.4		33	50.3
1880	41	53	23.8		14	56.5		26	41.4		33	39.5
1881	258	14	27.1		16	22.8		24	35.4		33	28.7
1882	114	35	30.4		17	49.1		22	29.4		33	17.9
1883	330	56	33.8		19	15.3		20	23.4		33	7.1
1884	191	49	53.7		20	41.6		18	17.4		32	56.3
1885	48	10	57.0		22	7.9		16	11.4		32	45.5
1886	264	32	0.3		23	34.2		14	5.4		32	34.7
1887	120	53	3.6		25	0.5		11	59.4		32	23.9
1888	341	46	23.6		26	26.7		9	53.4		32	13.1
1889	198	7	26.9		27	53.0		7	47.4		32	2.3
1890	54	28	30.2		29	19.3		5	41.4		31	51.5
1891	270	49	33.5		30	45.6		3	35.4		31	40.7
1892	131	42	53.4		32	11.9		1	29.4		31	29.9
1893	348	3	56.8		33	38.1	141	59	23.4		31	19.1
1894	204	25	0.1		35	4.4		57	17.4		31	8.3
1895	60	46	3.4		36	30.7		55	11.4		30	57.5
1896	281	39	23.3		37	57.0		53	5.4		30	46.7
1897	138	0	26.6		39	23.3		50	59.4		30	35.9
1898	354	21	30.0		40	49.5		48	53.4		30	25.1
1899	210	42	33.3		42	15.8		46	47.4		30	14.3
1900	67	3	36.6		43	42.1		44	41.4		30	3.5
1901	283	24	39.9		45	8.4		42	35.4		29	52.7
1902	139	45	43.2		46	34.7		40	29.4		29	41.9
1903	356	6	46.5		48	0.9		38	23.4		29	31.1
1904	217	0	6.5		49	27.2		36	17.4		29	20.3

Tables of the Motion of Iapetus—Continued.

Year.	Longitude.			Perisaturnium.			Node.			Inclination.		
	°	′	″	°	′	″	°	′	″	°	′	″
1905	73	21	9.8	353	50	53.5	141	34	11.4	18	29	9.5
1906	289	42	13.1		52	19.8		32	5.4		28	58.7
1907	146	3	16.4		53	46.1		29	59.4		28	47.9
1908	6	56	36.4		55	12.3		27	53.4		28	37.1
1909	223	17	39.7		56	38.6		25	47.4		28	26.3
1910	79	38	43.0		58	4.9		23	41.4		28	15.5
1911	295	59	46.3		59	31.2		21	35.4		28	4.7
1912	156	53	6.2	354	0	57.5		19	29.4		27	53.9
1913	13	14	9.6		2	23.7		17	23.4		27	43.1
1914	229	35	12.9		3	50.0		15	17.4		27	32.3
1915	85	56	16.2		5	16.3		13	11.4		27	21.5
1916	306	49	36.1		6	42.6		11	5.4		27	10.7
1917	163	10	39.4		8	8.9		8	59.4		26	59.9
1918	19	31	42.7		9	35.1		6	53.4		26	49.1
1919	235	52	46.1		11	1.4		4	47.4		26	38.3
1920	96	46	6.0		12	27.7		2	41.4		26	27.5
1921	313	7	9.3		13	54.0		0	35.4		26	16.7
1922	169	28	12.6		15	20.3	140	58	29.4		26	5.9
1923	25	49	15.9		16	46.5		56	23.4		25	55.1
1924	246	42	35.9		18	12.8		54	17.4		25	44.3
1925	103	3	39.2		19	39.1		52	11.4		25	33.5
1926	319	24	42.5		21	5.4		50	5.4		25	22.7
1927	175	45	45.8		22	31.7		47	59.4		25	11.9
1928	36	39	5.8		23	57.9		45	53.4		25	1.1
1929	253	0	9.1		25	24.2		43	47.4		24	50.3
1930	109	21	12.4		26	50.5		41	41.4		24	39.5
1931	325	42	15.7		28	16.8		39	35.4		24	28.7
1932	186	35	35.6		29	43.1		37	29.4		24	17.9
1933	42	56	39.0		31	9.3		35	23.4		24	7.1
1934	259	17	42.3		32	35.6		33	17.4		23	56.3

Tables of the Motion of Iapetus—Continued.

Year.	Longitude.			Perisaturnium.			Node.			Inclination.		
	°	′	″	°	′	″	°	′	″	°	′	″
1935	115	38	45.6	354	34	1.9	140	31	11.4	18	23	45.5
1936	336	32	5.5		35	28.2		29	5.4		23	34.7
1937	192	53	8.8		36	54.5		26	59.4		23	23.9
1938	49	14	12.2		38	20.7		24	53.4		23	13.1
1939	265	35	15.5		39	47.0		22	47.4		23	2.3
1940	126	28	35.4		41	13.3		20	41.4		22	51.5
1941	342	49	38.7		42	39.6		18	35.4		22	40.7
1942	199	10	42.0		44	5.9		16	29.4		22	29.9
1943	55	31	45.4		45	32.1		14	23.4		22	19.1
1944	276	25	5.3		46	58.4		12	17.4		22	8.3
1945	132	46	8.6		48	24.7		10	11.4		21	57.5
1946	349	7	11.9		49	51.0		8	5.4		21	46.7
1947	205	28	15.2		51	17.3		5	59.4		21	35.9
1948	66	21	35.2		52	43.5		3	53.4		21	25.1
1949	282	42	38.5		54	9.8		1	47.4		21	14.3
1950	139	3	41.8		55	36.1	139	59	41.4		21	3.5

5060—82——10

Iapetus.

MONTHS.

Months.	Longitude.	Perisaturnium.	Node.	Inclination.	Months.	Longitude.	Perisaturnium.	Node.	Inclination.
	° ′ ″	′ ″	′ ″	′ ″		° ′ ″	′ ″	′ ″	′ ″
January . .	0 0 0.0	0 0.0	0 0.0	0 0.0	July	101 22 6.7	0 42.8	1 2.5	0 5.4
February .	140 40 35.0	0 7.3	0 10.7	0 0.9	August . .	242 2 41.7	0 50.1	1 13.2	0 6.2
March . . .	267 44 20.1	0 13.9	0 20.4	0 1.7	September .	22 43 16.7	0 57.4	1 23.9	0 7.2
April . . .	48 24 55.1	0 21.3	0 31.1	0 2.7	October . .	158 51 35.0	1 4.5	1 34.2	0 8.1
May . . .	184 33 13.4	0 28.4	0 41.4	0 3.5	November .	299 32 10.0	1 11.9	1 44.9	0 9.0
June . . .	325 13 48.4	0 35.7	0 52.1	0 4.5	December .	75 40 28.4	1 19.0	1 55.3	0 9.9

DAYS.

Days.	Longitude.	Perisaturnium.	Node.	Days.	Longitude.	Perisaturnium.	Node.	Days.	Longitude.	Perisaturnium.	Node.
	° ′ ″	″	″		° ′ ″	″	″		° ′ ″	″	″
1	4 32 16.6	0.2	0.3	12	54 27 19.3	2.8	4.1	22	99 50 5.5	5.2	7.6
2	9 4 33.2	0.5	0.7	13	58 59 36.0	3.1	4.5	23	104 22 22.1	5.4	7.9
3	13 36 49.8	0.7	1.0	14	63 31 52.6	3.3	4.8	24	108 54 38.7	5.7	8.3
4	18 9 6.4	0.9	1.4	15	68 4 9.2	3.5	5.2	25	113 26 55.3	5.9	8.6
5	22 41 23.1	1.2	1.7	16	72 36 25.8	3.8	5.5	26	117 59 11.9	6.1	9.0
6	27 13 39.7	1.4	2.0	17	77 8 42.4	4.0	5.9	27	122 31 28.5	6.4	9.3
7	31 45 56.3	1.7	2.4	18	81 40 59.0	4.3	6.2	28	127 3 45.1	6.6	9.7
8	36 17 12.9	1.9	2.8	19	86 13 15.6	4.5	6.6	29	131 36 1.7	6.9	10.0
9	40 49 29.5	2.1	3.1	20	90 45 32.2	4.7	6.9	30	136 8 18.4	7.1	10.4
10	45 22 46.1	2.4	3.5	21	95 17 48.8	5.0	7.2	31	140 40 35.0	7.3	10.7

N. B.—In January and February of leap year the number of the day must be diminished by a unit.

HOURS.

Hours.	Longitude.	Hours.	Longitude.	Hours.	Longitude.	Hours.	Longitude.	Hours.	Longitude.
	° ′ ″		° ′ ″		° ′ ″		° ′ ″		° ′ ″
1	0 11 20.7	6	1 8 4.2	11	2 4 47.6	16	3 1 31.1	21	3 58 14.5
2	0 22 41.4	7	1 19 24.8	12	2 16 8.3	17	3 12 51.8	22	4 9 35.2
3	0 34 2.1	8	1 30 45.5	13	2 27 29.0	18	3 24 12.5	23	4 20 55.9
4	0 45 22.8	9	1 42 6.2	14	2 38 49.7	19	3 35 33.2	24	4 32 16.6
5	0 56 43.5	10	1 53 26.9	15	2 50 10.4	20	3 46 53.8		

MINUTES.

Min.	Long.	Min.	Long.	Min.	Long.	Min.	Long.	Min.	Long.	Min.	Long.	Min.	Long.
	′ ″		′ ″		′ ″		′ ″		′ ″		′ ″		′ ″
1	0 11.3	10	1 53.4	19	3 35.6	28	5 17.7	37	6 59.8	45	8 30.5	53	10 1.3
2	0 22.7	11	2 4.8	20	3 46.9	29	5 29.0	38	7 11.1	46	8 41.9	54	10 12.6
3	0 34.0	12	2 16.1	21	3 58.2	30	5 40.3	39	7 22.4	47	8 53.2	55	10 24.0
4	0 45.4	13	2 27.5	22	4 9.6	31	5 51.7	40	7 33.8	48	9 4.6	56	10 35.3
5	0 56.7	14	2 38.8	23	4 20.9	32	6 3.0	41	7 45.1	49	9 15.9	57	10 46.7
6	1 8.1	15	2 50.2	24	4 32.3	33	6 14.4	42	7 56.5	50	9 27.2	58	10 58.0
7	1 19.4	16	3 1.5	25	4 43.6	34	6 25.7	43	8 7.8	51	9 38.6	59	11 9.3
8	1 30.8	17	3 12.9	26	4 55.0	35	6 37.1	44	8 19.2	52	9 49.9	60	11 20.7
9	1 42.1	18	3 24.2	27	5 6.3	36	6 48.4						

IAPETUS.

Equation of Center and Radius Vector.

M	Equation of Center.	Diff.	Radius Vector $a = 1$	Diff.	M
°	° ′ ″	″			°
0	+0 0 0.0—	+207.3—	0.972205	+ 5—	360
1	0 3 27.3	207.2	0.972210	13	359
2	0 6 54.5	207.1	0.972223	22	358
3	0 10 21.6	206.9	0.972245	32	357
4	0 13 48.5	206.6	0.972277	40	356
5	+0 17 15.1—	+206.2—	0.972317	+ 49—	355
6	0 20 41.3	205.8	0.972366	58	354
7	0 24 7.1	205.3	0.972424	67	353
8	0 27 32.4	204.8	0.972491	76	352
9	0 30 57.2	204.2	0.972567	84	351
10	+0 34 21.4—	+203.4—	0.972651	+ 93—	350
11	0 37 44.8	202.7	0.972744	103	349
12	0 41 7.5	201.9	0.972847	112	348
13	0 44 29.4	201.0	0.972959	119	347
14	0 47 50.4	200.0	0.973078	128	346
15	+0 51 10.4—	+198.9—	0.973206	+ 138—	345
16	0 54 29.3	197.8	0.973344	145	344
17	0 57 47.1	196.7	0.973489	153	343
18	1 1 3.8	195.5	0.973642	163	342
19	1 4 19.3	194.2	0.973805	170	341
20	+1 7 33.5—	+192.8—	0.973975	+ 179—	340
21	1 10 46.3	191.4	0.974154	187	339
22	1 13 57.7	189.8	0.974341	196	338
23	1 17 7.5	188.3	0.974537	204	337
24	1 20 15.8	186.7	0.974741	211	336

Equation of Center and Radius Vector—Continued.

M	Equation of Center.	Diff.	Radius Vector $a = 1$	Diff.	M
°	° ′ ″	″			°
25	+1 23 22.5—	+185.1—	0.974952	+ 219—	335
26	1 26 27.6	183.3	0.975171	228	334
27	1 29 30.9	181.5	0.975399	236	333
28	1 32 32.4	179.7	0.975635	243	332
29	1 35 32.1	177.7	0.975878	251	331
30	+1 38 29.8—	+175.8—	0.976129	+ 258—	330
31	1 41 25.6	173.8	0.976387	266	329
32	1 44 19.4	171.6	0.976653	273	328
33	1 47 11.0	169.5	0.976926	281	327
34	1 50 0.5	167.3	0.977207	288	326
35	+1 52 47.8—	+165.2—	0.977495	+ 294—	325
36	1 55 33.0	162.8	0.977789	301	324
37	1 58 15.8	160.4	0.978091	309	323
38	2 0 56.2	158.1	0.978400	316	322
39	2 3 34.3	155.7	0.978716	321	321
40	+2 6 10.0—	+153.1—	0.979037	+ 328—	320
41	2 8 43.1	150.5	0.979365	336	319
42	2 11 13.6	147.9	0.979701	341	318
43	2 13 41.5	145.4	0.980042	347	317
44	2 16 6.9	142.8	0.980389	354	316
45	+2 18 29.7—	+139.8—	0.980743	+ 360—	315
46	2 20 49.5	137.2	0.981103	366	314
47	2 23 6.7	134.3	0.981469	371	313
48	2 25 21.0	131.5	0.981840	377	312
49	2 27 32.5	128.8	0.982217	382	311

Equation of Center and Radius Vector—Continued.

M	Equation of Center.	Diff.	Radius Vector $a = 1$	Diff.	M
°	° ′ ″	″			°
50	+2 29 41.3—	+125.7—	0.982599	+ 387—	310
51	2 31 47.0	122.8	0.982986	393	309
52	2 33 49.8	119.8	0.983379	398	308
53	2 35 49.6	116.9	0.983777	403	307
54	2 37 46.5	113.6	0.984180	408	306
55	+2 39 40.1—	+110.5—	0.984588	+ 413—	305
56	2 41 30.6	107.6	0.985001	416	304
57	2 43 18.2	104.3	0.985417	421	303
58	2 45 2.5	101.2	0.985838	426	302
59	2 46 43.7	97.8	0.986264	430	301
60	+2 48 21.5—	+ 94.8—	0.986694	+ 434—	300
61	2 49 56 3	91.4	0.987128	437	299
62	2 51 27.7	88.1	0.987565	441	298
63	2 52 55.8	84.9	0.988006	445	297
64	2 54 20.7	81.7	0.988451	448	296
65	+2 55 42.4—	+ 78.1—	0.988899	+ 451—	295
66	2 57 0.5	74.8	0.989350	454	294
67	2 58 15.3	71.4	0.989804	458	293
68	2 59 26.7	67.9	0.990262	460	292
69	3 0 34 6	64.6	0.990722	463	291
70	+3 1 39.2—	+ 61.3—	0.991185	+ 466	290
71	3 2 40.5	57.8	0.991651	467	289
72	3 3 38.3	54.3	6.992118	470	288
73	3 4 32.6	50.7	0.992588	472	287
74	3 5 23.3	47.3	0.993060	474	286

Equation of Center and Radius Vector—Continued.

M	Equation of Center.			Diff.	Radius Vector $a = 1$	Diff	M
°	°	′	″	″			
75	+3	6	10.6—		0.993534		285
				+43.8—		+ 476—	
76	3	6	54.4		0.994010		284
				40.4		477	
77	3	7	34.8		0.994487		283
				36.8		480	
78	3	8	11.6		0.994967		282
				33.6		480	
79	3	8	45.2		0.995447		281
				29.6		481	
80	+3	9	14.8—		0.995928		280
				+26.4—		+ 482—	
81	3	9	41.2		0.996410		279
				22.9		483	
82	3	10	4.1		0.996893		278
				19.3		485	
83	3	10	23.4		0.997378		277
				15.7		484	
84	3	10	39.1		0.997862		276
				12.3		485	
85	+3	10	51.4—		0.998347		275
				+ 8.8—		+ 485—	
86	3	11	0.2		0.998832		274
				5.2		485	
87	3	11	5.4		0.999317		273
				+ 2.0—		485	
88	3	11	7.4		0.999802		272
				— 2.0+		485	
89	3	11	5.4		1.000287		271
				5.0		485	
90	+3	11	0.4—		1.000772		270
				— 8.6+		+ 485—	
91	3	10	51.8		1.001257		269
				12.2		483	
92	3	10	39.6		1.001740		268
				15.6		483	
93	3	10	24.0		1.002223		267
				19.2		482	
94	3	10	4.8		1.002705		266
				22.6		481	
95	+3	9	42.2—		1.003186		265
				— 26.0+		+ 480—	
96	3	9	16.2		1.003666		264
				29.2		478	
97	3	8	47.0		1.004144		263
				32.6		477	
98	3	8	14.4		1.004621		262
				36.2		475	
99	3	7	38.2		1.005096		261
				39.4		474	

Equation of Center and Radius Vector—Continued.

M	Equation of Center.			Diff.	Radius Vector $a = 1$	Diff.	M
°	°	′	″	″			
100	+3	6	58.8—		1.005570		260
				−42.8+		+ 472—	
101	3	6	16.0		1.006042		259
				46.2		469	
102	3	5	29.8		1.006511		258
				49.6		468	
103	3	4	40.2		1.006979		257
				52.8		465	
104	3	3	47.4		1.007444		256
				56.0		462	
105	+3	2	51.4—		1.007906		255
				−59.1+		+ 460—	
106	3	1	52.3		1.008366		254
				62.3		458	
107	3	0	50.0		1.008824		253
				65.7		454	
108	2	59	44.3		1.009278		252
				69.0		451	
109	2	58	35.3		1.009729		251
				72.1		449	
110	+2	57	23.2—		1.010178		250
				−75.1+		+ 446—	
111	2	56	8.2		1.010622		249
				78.1		442	
112	2	54	50.1		1.011066		248
				81.2		438	
113	2	53	28.9		1.011504		247
				84.4		434	
114	2	52	4.5		1.011938		246
				87.3		431	
115	+2	50	37.2—		1.012369		245
				−90.3+		+ 428—	
116	2	49	6.9		1.012797		244
				93.3		423	
117	2	47	33.6		1.013220		243
				96.2		419	
118	2	45	57.4		1.013639		242
				98.9		415	
119	2	44	18.5		1.014054		241
				102.0		410	
120	+2	42	36.5—		1.014464		240
				−104.4+		+ 406—	
121	2	40	52.1		1.014870		239
				107.6		402	
122	2	39	4.5		1.015272		238
				110.1		397	
123	2	37	14.4		1.015669		237
				113.0		393	
124	2	35	21.4		1.016062		236
				115.7		387	

Equation of Center and Radius Vector—Continued.

M	Equation of Center.	Diff.	Radius Vector $a = 1$	Diff.	M
°	° ′ ″				
125	+2 33 25.7—	″	1.016449		235
		−118.0+		+ 381—	
126	2 31 27.7		1.016830		234
		120.9		377	
127	2 29 26.8		1.017207		233
		123.4		372	
128	2 27 23.4		1.017579		232
		126.0		367	
129	2 25 17.4		1.017946		231
		128.3		361	
130	+2 23 9.1—		1.018307		230
		−130.9+		+ 356—	
131	2 20 58.2		1.018663		229
		133.2		349	
132	2 18 45.0		1.019012		228
		135.5		344	
133	2 16 29.5		1.019356		227
		137.9		339	
134	2 14 11.6		1.019695		226
		140.1		334	
135	+2 11 51.5—		1.020029		225
		−142.6+		+ 328—	
136	2 9 28.9		1.020357		224
		144.6		320	
137	2 7 4.3		1.020677		223
		146.7		314	
138	2 4 37.6		1.020991		222
		149.0		308	
139	2 2 8.6		1.021299		221
		151.0		302	
140	+1 59 37.6—		1.021601		220
		−152.9+		+ 295—	
141	1 57 4.7		1.021896		219
		154.9		289	
142	1 54 29.8		1.022185		218
		156.8		284	
143	1 51 53.0		1.022469		217
		158.8		276	
144	1 49 14.2		1.022745		216
		160.6		268	
145	+1 46 33.6—		1.023013		215
		−162.3+		+ 262—	
146	1 43 51.3		1.023275		214
		164.0		256	
147	1 41 7.3		1.023531		213
		165.9		250	
148	1 38 21.4		1.023781		212
		167.4		242	
149	1 35 34.0		1.024023		211
		169.1		234	

Equation of Center and Radius Vector—Continued.

M	Equation of Center	Diff.	Radius Vector $a = 1$	Diff.	M
°	° ′ ″	″			
150	+1 32 44.9—		1.024257		210
		—170.6+		+227—	
151	1 29 54.3		1.024484		209
		172.1		221	
152	1 27 2.2		1.024705		208
		173.5		213	
153	1 24 8.7		1.024918		207
		—174.9—		207	
154	1 21 13.8		1.025125		206
		176.3		199	
155	+1 18 17.5—		1.025324		205
		—177.7+		+191—	
156	1 15 19.8		1.025515		204
		178.7		184	
157	1 12 21.1		1.025699		203
		180.0		176	
158	1 9 21.1		1.025875		202
		181.2		169	
159	1 6 19.9		1.026044		201
		182.4		161	
160	+1 3 17.5—		1.026205		200
		—183.3+		+154—	
161	1 0 14.1		1.026359		199
		184.3		147	
162	0 57 9.8		1.026506		198
		185.3		138	
163	0 54 4.5		1.026644		197
		186.2		130	
164	0 50 58.3		1.026774		196
		187.1		123	
165	+0 47 51.2—		1.026897		195
		—187.8+		+115—	
166	0 44 43.4		1.027012		194
		188.6		107	
167	0 41 34.8		1.027119		193
		189.3		100	
168	0 38 25.5		1.027219		192
		189.9		93	
169	0 35 15.6		1.027312		191
		190.4		84	
170	+0 32 5.2—		1.027396		190
		—191.0+		+75—	
171	0 28 54.2		1.027471		189
		191.4		66	
172	0 25 42.8		1.027537		188
		191.9		60	
173	0 22 30.9		1.027597		187
		192.4		53	
174	0 19 18.5		1.027650		186
		192.6		45	

Equation of Center and Radius Vector—Continued.

M	Equation of Center.	Diff.	Radius Vector $a = 1$	Diff.	M
°	° ′ ″	″			
175	+0 16 5.9—	−192.8+	1.027695	+ 36—	185
176	0 12 53.1	193.1	1.027731	28	184
177	0 9 40.0	193.3	1.027759	20	183
178	0 6 26.7	193.3	1.027779	11	182
179	0 3 13.4	193.4+	1.027790	+ 5—	181
180	+0 0 0.0—		1.027795		180

APPENDIX II, 1882.

ANNULAR ECLIPSE OF THE SUN

MARCH 15-16, 1885.

BY

ALLAN D. BROWN,
COMMANDER, U. S. NAVY,

AND

ALBERT G. WINTERHALTER,
ENSIGN, U. S. NAVY.

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ANNULAR ECLIPSE OF THE SUN, MARCH 15–16, 1885.

Arrangements having been made with the Western Union Telegraph Company, through the courtesy of General THOMAS T. ECKERT, the general manager, for the gratuitous use of their wires, the following circular was issued:

[Circular.]

An annular eclipse of the sun takes place on the 16th of March. The annulus describes a path about seventy-five miles in width, crossing Montana, Idaho, and the northwestern portion of California. The following points are within the annular shadow:

All stations on the Northern Pacific Railway between Livingston and Clasoil, inclusive.

All stations on the Utah Northern Railway between Spring Hill and Butte City, inclusive.

Virginia City.

All stations on the Oregon Short Line between Mountain Home and Payette, inclusive.

All stations on the Oregon Division of the Central Pacific Railway between Red Bluff and Delta, inclusive, and on the proposed line of the road as far north as Yreka.

The center of the annulus will pass over the following points: Fort Maginnis, Fort Lewis, Gallatin, Dillon, Boisé City, Delta, Humboldt City.

PORTION OF PATH OF ANNULUS AND APPROXIMATE TIMES OF ANNULAR PHASE.

Approximate Greenwich mean time.		Northern limit of annulus path.				Central line.				Southern limit of annulus path.				Duration on Central line.	Approximate local time, A. M.	
		Lat. N.		Long. W.*		Lat. N.		Long. W.		Lat. N.		Long. W.				
h.	m.	°	′	°	′	°	′	°	′	°	′	°	′		h.	m.
5	5	40	36	125	44	40	6	124	54	39	36	124	4	About two minutes.	8	45
5	10	41	34	122	55	41	4	122	10	40	35	121	25		9	2
5	15	42	34	120	22	42	4	119	40	41	35	118	59		9	15
5	20	43	35	117	58	43	6	117	20	41	36	116	41		9	32
5	25	44	38	115	41	44	9	115	5	53	39	114	28		9	45
5	30	45	43	113	27	45	13	112	53	44	44	112	19		9	58
5	35	46	50	111	16	[illegible]	20	110	44	45	50	110	12		10	12
5	40	47	58	109	5	47	28	108	35	46	58	108	4		10	26
5	45	49	9	106	53	48	38	106	24	48	7	105	55		10	39

Through the courtesy of the Western Union Telegraph Company the noon signals from the Observatory will be sent on the 15th and 16th of March over their wires

* Longitude west from Greenwich.

as far west as Helena, Boise City, Sacramento, and Delta, thus affording an opportunity to intending observers to obtain the correct time on those dates. The noon signal is sent as described in the inclosed circular. It is desirable that the beginning and end of the eclipse, and also the annular phase, should be noted as accurately as possible. Reports of observations will be gladly received.

S. R. FRANKLIN,
Rear-Admiral, U. S. Navy, Superintendent.

U. S. NAVAL OBSERVATORY,
February 19, 1885.

This was distributed through the agency of the Western Union Telegraph Company and the Union and Central Pacific Railway Companies. Meanwhile measures were undertaken at the Observatory looking to the employment of the photoheliographic apparatus of the Transit of Venus Commission erected in the Observatory grounds, for taking photographs of the different stages of the eclipse, in accordance with the request of Professor NEWCOMB, Superintendent of the Nautical Almanac, who desired them for the purpose of certain investigations which he was pursuing. Ensign WINTERHALTER was about finishing a course in photography at the Smithsonian Institution (a favor granted to the Observatory at the request of Professor BAIRD in response to the wish of the Superintendent), and on the 1st of March he began the preliminary work

A number of the collodion plates of the Transit of Venus Commission, prepared for the transit of 1882, were on hand; experiments were therefore undertaken to see whether they were still in good condition; trial developed the fact that a fair percentage could be relied on. As the manipulation of these plates was not so easy as that of the more modern gelatine dry plates which offer many advantages over the former, experiments with the latter were also undertaken with reasonably successful results. Some doubt having been expressed as to the reliability of the gelatine plates for measurement, comparisons were made by Mr. A. S. FLINT of two negatives of the different varieties taken on the same day; these resulted favorably, thus verifying the remarks of EDER, as found in chapter 8 of his work on Modern Dry Plates.

In this he says:

"With the view of determining to what extent gelatine plates could be depended upon for work requiring extreme precision, I made a set of experiments which were so satisfactory as to leave no doubt of the suitability for this purpose of good gelatine plates.

Errors caused by expansion of the film.—I have already alluded to the expansion and distortion to which inferior gelatine emulsions are liable during development, and, as a means of proving whether a film which apparently adheres to the plate suffers any expansion which could be detected by microscopical measurement, I made the following experiment:

A fine net-work was scratched with a diamond on a sheet of glass, and a number of gelatine plates prepared in various ways were exposed under it and developed, half with alkaline pyrogallic acid and half with ferrous-oxalate. Some of the plates had been coated without cleaning, others had received in different cases substrata of water

glass, or gelatine and chrome-alum. In all cases the films adhered well and showed no signs of frilling. When the plates were examined against the original there was no expansion or contraction visible, although the means of detection that I employed were delicate enough to detect a variation of $\frac{1}{6000}$ in the dimensions of the line. We may, consequently, conclude that, as regards expansion of the film itself, good gelatine plates are thoroughly reliable for this class of work."

It was decided to use on the day of the eclipse collodion and gelatine plates alternately, even at the risk of overexposure of the latter; the slide being arranged to give the full exposure necessary for the former, it followed that the latter, requiring a shorter exposure, would be somewhat unfairly treated.

The apparatus used is fully described in Part I, "Observations of the Transit of Venus, December 8–9, 1874 Edited by SIMON NEWCOMB." The necessary adjustments were made by Commander BROWN, Ensign WINTERHALTER, and Mr. WILLIAM F. GARDNER. The party on the day of the eclipse was as follows: Commander BROWN at the chronometer in the photograph house, Ensign WINTERHALTER at the exposing slide, Ensign TAYLOR at the chronograph in the transit house, Mr. GARDNER at the heliostat.

The sky was clear in the forenoon, but soon after the first contact scud began to fly from the westward, increasing gradually to such an extent that during the latter half of the eclipse but few photographs could be taken, and making the last contact invisible. The first photograph was taken as soon as the word "time" was heard from Assistant Astronomer PAUL, who was stationed at the 5-inch equatorial near the photograph house; this plate was exposed about four seconds after geometrical contact, and shows plainly to the naked eye the entrance of the moon's disk upon that of the sun. The total number of exposures was 99; the plates were developed by Mr. WINTERHALTER, and a portion of them were afterwards measured by Ensigns HOGG and TAYLOR on the measuring engine; the results of these measurements will be found in the accompanying tables.

As an examination of the comparative merits of the plates in all other respects except the immovability of the film, the following *résumé* may be of value:

Collodion.—Excellent, 3; good, 10; passable, 14; worthless, 15. Total, 42.

Gelatine.—Excellent, 17; good, 14; passable, 7; worthless, 10. Total, 49.

Besides those enumerated, 2 collodion plates were found to have received no impression when developed (from some unknown cause), 4 were taken for trial only, and were not intended for measurement, and 2 gelatine negatives were accidentally lost through breakage. This comparison of the plates was carefully made after all had been developed, under a magnifying power of about three diameters; but it must be borne in mind that the gelatine plates suffered from overexposure owing to the fact that the slit in the exposing slide was opened further than necessary for them in order to admit of sufficient exposure for the collodion plates. When, as accidentally happened, the slit was narrowed to what would have been fatal to the collodion plates, the gelatine showed marked improvement, proving that a shorter exposure would be necessary in the future. On the other hand, it must be remarked that the weather was rather more favorable to the gelatine than to the collodion plates; owing to the

passing clouds, plates of both kinds were sometimes so much obscured as to render them worthless. The greater sensitiveness of the gelatine film secured for it a number of good and still more of passable negatives available for measurement, which would not have been possible for the collodion. In this statement reference is, of course, made solely to the quality of the image and none whatever to the question of the comparative expansion or shrinkage of the film.

OBSERVATIONS OF FIRST CONTACT MADE AT THE NAVAL OBSERVATORY.

[Observers: Professor A. HALL, Professor E. FRISBY, and Assistant Astronomer H. M. PAUL.]

Washington mean time.	Observer.	Remarks.
23 57 6.9	H.	Observation fair, perhaps one or two seconds late. The instrument was the 26-inch equatorial, with aperture reduced to 4 inches and power 383.
23 57 4.7	F.	Observed with 9.6-inch equatorial, with aperture reduced to 4 inches and power 90. Observation satisfactory.
23 57 7	P.	Aperture 5 inches, magnifying power about 90. Do not think I could have observed it one second earlier with the state of the atmosphere as it was.

OBSERVATIONS WITH THE TRANSIT INSTRUMENT.

The transits of the second limbs of the moon and sun were observed with the transit instrument. The limb of the sun was moderately steady. That of the moon, though steadier, was faint at times on account of passing clouds. In the table below, the first column contains the threads observed; the second and third, the clock times—read from the chronograph—of the transit of the second limbs of the moon and sun over each thread; in the fourth and fifth columns are the individual threads reduced to the mean thread, correcting for motion and parallax in case of the moon, and for motion of the sun. The instrumental corrections have also been considered. In the sixth column are the respective differences.

[March 16.0, 1885. Observer, C. G. BOWMAN.]

Threads observed.	Moon II. Observed times of transit.	Sun II. Observed times of transit.	Moon II. Transits reduced to mean thread.	Sun II. Transits reduced to mean thread.	Differences. Sun II—Moon II.
	h. m. s.	h. m. s.	h. m. s.	h. m. s.	m. s.
B_1	23 45 24.20	23 47 21.25	23 45 43.75	23 47 40.42	1 56.67
B_2	25.80	22.80	43.86	40.50	56.64
B_3	28.30	25.05	43.82	40.26	56.44
C_1	40.70	37.00	44.02	40.25	56.23
C_2	42.20	38.60	43.84	40.21	56.37
C_3	43.80	40.45	43.74	40.39	56.65
C_4	45.65	42.00	43.94	40.32	56.38
C_5	47.00	43.40	43.79	40.24	56.45
D_1	59.30	55.40	43.85	40.26	56.41
D	61.70	57.95	43.74	40.34	56.60
D_3	63.65	59.85	43.90	40.49	56.59
		Means . . .	23 45 43.84	23 47 40.33	1 56.49 ± .029

Applying the approximate clock corrections to the observed right ascensions we have,

	h.	m.	s.
Right ascension Moon II,	23	45	34.63
Right ascension Sun II,	23	47	31.12
Difference,		1	56.49 ± .029^s

Correcting for the motion of the sun during the above interval, the difference of right ascension, at the time of the transit of the moon's second limb, becomes

$$1^m\ 56^s.20 \pm .029^s,$$

Epoch, March $16^d\ 0^h\ 7^m\ 45^s.4$.

OBSERVATIONS WITH THE TRANSIT CIRCLE.

The transits of the second limb of the sun, and of the second limb of the moon seen against the sun's disc, were observed with the Transit Circle, each over ten right ascension threads. The upper and lower limbs of the sun were also observed in north polar distance. The limbs of the sun were "unsteady," the limbs of the moon "fairly steady," though passing clouds interfered to prevent a symmetrical and satisfactory observation of the former.

Following are the observed times of transit with the necessary reductions. The first column indicates the thread (*see* Wash. Astron. Obsns. 1882, pp. xix and xxv); the second and third columns the observed times of transit of Moon II and Sun II, as read from the chronograph sheets; columns four and five are the separate threads reduced to the mean of the threads, allowing for motion and parallax in the case of the moon, and motion in the case of the sun; column six shows the separate differences.

TRANSITS OF MOON II AND SUN II.

[March 16.0, 1885. Observer, W. C. WINLOCK.]

Threads observed.	Moon II. Observed times of transit.	Sun II. Observed times of transit.	Moon II. Transits reduced to mean thread.	Sun II. Transits reduced to mean thread.	Differences. Sun II—Moon II.
	h. m. s.	h. m. s.	h. m. s.	h. m. s.	m. s.
B_1	23 45 54.62	23 47 51.10	23 46 4.52	23 48 0.81	1 56.29
B_2	56.29	52.78	.64	.97	.33
C_1	0.40	56.78	.57	.87	.30
C_2	2.60	58.73	.68	.77	.09
C_3	4.57	0.85	.58	.86	.28
C_4	6.70	2.80	.60	.74	.14
C_5	8.84	4.89	.65	.78	.13
D_1	12.85	9.00	.49	.80	.31
D_2	14.40	10.60	.54	.93	.39
D_3	17.12	13.11	.58	.82	.24
		Means . . .	23 46 4.58	23 48 0.83	+1 56.25 ± .021

Applying to these observed right ascensions the approximate values of instru-

mental and clock corrections (the final values of these corrections depend on a discussion of the whole year's work), we have,

		h.	m.	s.
Right ascension Moon II	=	23	45	34.83
Right ascension Sun II	=	23	47	31.08
Difference	=		1	56.25 ± 0s.021

If this difference is corrected further for the motion of the sun during the interval between the transit of the second limbs of the sun and moon, the resulting value for the real difference of right ascension at the time of transit of the moon's second limb, or at the epoch March 16^d 0^h 7^m $45^s.6$, is

$$1^m\ 55^s.96 \pm 0^s.021$$

REPORT OF MR. J. BLICKENSDERFER.

OMAHA, NEBR., *November* 18, 1885.

SIR: Herewith I send you report of observations of solar eclipse, March 16, 1885, at Kuna, and other points on Oregon Short Line Railway. I have given the results of all the principal observations and the data necessary to enable you to test the correctness of the reductions made. I also send you the original reports of the observers at Cañon Creek, Cleft, Parma, Nyssa, and Old Ontario, for your examination, and that you may determine what correction, if any, should be made to the time of duration of the ring as given by myself. The time-pieces of these side observers were not reliable enough to determine anything except the time of duration of the ring. Most of these observers report intelligently, and seem to have observed with care. Mr. WORTHEN, at Mountain Home, did not return to the central station, and I have not conferred with him since. The following is a verbatim copy of his report:

"First contact excellent; atmosphere clear; contact distinct; beaded edge observed one and a half seconds before actual contact; second and third contacts partially obscured by thin flying clouds, and contacts may have been taken one-fourth to one-half second late; the second contact not as distinct as third contact; fourth contact totally obscured by clouds."

Mr. PATTEN, who recorded time, reported as follows:

"At first contact observer called 'check' twice, once at 10^h 2^m $40^s.4$, which was about one second after he noticed beaded contact, and was at the time the beaded contact disappeared into a distinct line. Second call was at 10^h 2 $53^s.7$, when the sun first appeared to be eclipsed."

What Mr. WORTHEN may mean by "beaded edge," or, as Mr. Patten says, "beaded contact," is of course conjectural, but I suspect it was the first indentation of the sun's limb. I had instructed all the assistants (verbally) to watch for beads or beaded line of light at the internal contacts, and as WORTHEN mentions nothing of that kind in connection with the formation and rupture of the ring, but does mention "beaded

edge" in speaking of external contact, I suspect he was a little "muddled" on the subject.

All the observing stations have been connected with the public land surveys, and these connections will be sent, if you desire, as soon as the actual positions can be worked out and plats made.

I may yet add that I have not the utmost confidence in the behavior of the clock, but as the Washington time-signals came during the progress of the eclipse, I think the effect of whatever irregularity of rate there may have been was reduced to a minimum.

I am, sir, very respectfully, yours,

J. BLICKENSDERFER.

Rear-Admiral S. R. FRANKLIN,
Superintendent U. S. Naval Observatory,
Washington, D. C.

Observations of Annular Eclipse, March 16, 1885, *at Kuna, Idaho, by J. Blickensderfer.*

The central observing station selected was near Kuna, on the Oregon Short Line Railway, a station about 15 miles southwestward from Boisé City, Idaho. The accompanying map shows the position of the observing station in connection with the railway station, the railroad, and the United States land surveys.

The instruments used by myself were a 51-inch equatorial, 3″.3 aperture, by Petitpierre, Berlin, a 32-inch portable transit, by Young, and a sidereal clock, by Collie, and a four feet equatorial, 3″.5 aperture, by Byrne, N. Y., used by my assistant, C. C. VAN ARSDOL.

My own instruments were mounted on wooden pedestals set into the ground under tents. Mr. VAN ARSDOL'S equatorial was on wooden tripod.

The clock was supplied with a break-circuit arrangement, by which the seconds were recorded on a fillet by a Morse register. An independent battery was used, and an independent wire carried to and from the telegraph office at the railway station for the purpose of recording Washington time-signals on the Morse fillet. The mode in which this was done was as follows: When the time for receiving signals approached I seated myself at my break-circuit key in the telegraph office, and waited for the signals. When they came I did not attempt to record each as it came, but commenced to count one, two, three, four, five, and simultaneously with the fifth broke the circuit This was repeated as often as practicable, recording every fifth signal. In this way I think I was able much more accurately to break the circuit simultaneously with the signal, as by the time the fifth successive signal came the ear and hand were well prepared for quick perception and instantaneous action.

On the 15th the Washington time-signals came with tolerable distinctness and regularity, and I succeeded in recording the following:

Washington signal.	Sidereal clock.	Washington signal.	Sidereal clock.
h. m. s.	h. m. s.	h. m. s.	h. m. s.
11 59 4.00	8 47 48.79	11 59 34.00	8 48 18.84
9.00	53.72	39.00	23.80
14.00	58.74	44.00	28.70
19.00	48 3.65	49.00	33.80
24.00	8.79	12 0 0.00	44.77

From which I infer Washington noon was the same as $8^h\ 48^m\ 44^s.84$ of my clock.

The time-signals were also observed by my assistants, G. M. CHRISTIE, C. C. VAN ARSDOL, and F. W. BLACKFORD. Mr. CHRISTIE had a Jergensen pocket chronometer, but succeeded only in recording the noon signal, from which was deduced $8^h\ 48^m\ 44^s\ 25$ as the equivalent of Washington noon. Mr. VAN ARSDOL had a good patent lever watch, and obtained five observations, from which was derived $8^h\ 48^m\ 44^s.43$ as the equivalent of Washington noon. Mr. BLACKFORD also had a patent lever watch, and obtained four observations, from which was derived $8^h\ 48^m\ 44^s.01$ as the equivalent of Washington noon. The assistants' time-keepers were compared with the clock shortly before and immediately after the signals were received.

On the 16th the signals came very irregularly, and it was much more difficult to recognize the proper times; but I succeeded in recognizing and recording the following on the Morse fillet:

Washington time.	Sidereal clock.
h. m. s.	h. m. s.
11 59 34.00	8 52 26.81
39.00	31.79
44.00	36.77
49.00	41.79

From which I infer that Washington noon was equal to $8^h\ 52^m\ 52^s.84$ of the clock. Assistants CHRISTIE and VAN ARSDOL likewise again observed Washington signals. CHRISTIE recognized and recorded three signals, from which was obtained $8^h\ 52^m\ 52^s.48$; but VAN ARSDOL recognized and obtained one signal only, from which was derived $8^h\ 52^m\ 52^s.51$ as the equivalent of Washington noon.

From my own observations I infer the clock gained $11^s.444$ on sidereal time in one mean solar day or $11^s.413$ per sidereal day. The data derived from comparisons with Washington time as made by myself are used throughout.

Observations of the eclipse were made with the two equatorials by Mr. VAN ARSDOL and myself. My observations as far as successful were recorded on the Morse fillet by means of a break-circuit key. Mr. VAN ARSDOL'S were noted on call by Assistant CHRISTIE with the Jergensen pocket chronometer, which was compared with the clock before and after each observation and the corresponding clock times thence deduced.

I failed to get the first contact from not having the telescope directed to the point of contact.

The second contact was observed beautifully. The ring did not form instantaneously, the first appearance being a broken line of light, the parts of which, as well as the dark intervals, were not short and numerous, but comparatively long.

In a second or more after the first appearance of the broken line it flashed into a full line of light. The sun was partially obscured by thin clouds so I could comfortably observe without a screen of any kind. Power used, 110. The unfortunate thing about this observation was, the Morse register was not started in time, and so the date was not recorded.

Third contact: Sun partially obscured by clouds, more so than at the formation of the ring. When the ring broke it was into a broken line as at the formation, and of the same character, not round beads, but long slender streaks; but immediately these scattering parts of light disappeared. The times recorded are when the line of light was first broken, and when the last detached parts of light vanished. When the line of light was first broken I was a little in doubt whether it was occasioned by clouds or not; but the character of the broken line being so identical in appearance with that at the formation of the ring leads me to think it was not occasioned by clouds, but occurred as in the formation. No screen glass was used. Power 110, same as at second contact.

Fourth contact: This was very satisfactorily observed and recorded. The edge of the moon's limb was sharp and well defined, with but little tremor. There was a fleecy haze, but it did not prevent a good view, and a screen of a light greenish blue shade was used. The first time recorded was when the moon's limb was yet some distance upon the sun, and was designed to record "not quite off"; but I found it so long before the end that I recorded another "not quite off", which is the second date. Then I waited for the end, and the third date was when I thought the sun's limb was just full. At the last date the moon was *certainly* off, as I could discover no change in the appearance of the limb between the last two dates. Power used, Kahler's diagonal 250. Definition very satisfactory.

The times, as observed by myself, were as follows:

RUPTURE OF RING.

Clock time.	Washington time.	Remarks.
h. m. s.	h. m. s.	
21 15 36.86	0 22 40.10	Broken ring.
39.15	42.39	Detached parts vanished.
END OF ECLIPSE.		
22 41 32.87	1 28 21.27	Not quite off.
38.62	27.02	Not quite off.
47.55	35.95	End of eclipse.
50.50	38.90	End *certain*.

I am satisfied end was before last date, and I cannot put it later than the time given as "end eclipse."

Assistant VAN ARSDOL reports as follows:

At beginning of eclipse the sky was clear and the observations satisfactory. When time was called was a little uncertain whether it was the moon's limb I saw; but kept eye on it and found it increasing, which confirms me in feeling sure the eclipse had commenced. If in error the time is a fraction too late. Power used, 106

Formation of ring.—When time was called the ring was fully formed. The sun was obscured by clouds for some time immediately before the formation of the ring and when clouds broke away was unable to get telescope directed to point of contact until ring was fully formed. Time is too late. Power, 64.

Rupture of ring.—The first call was too early, as I saw the ring clearly after the call. The last call was after ring had disappeared; but the sun being partially obscured by clouds, was unable to determine whether the ring had broken or not. The observation was very unsatisfactory. Power, 64.

End of eclipse.—The first and second calls both before the end. The last call was probably after end. Am satisfied end was nearer last call than second. I estimate last call about two seconds late. Power, 106.

BEGINNING OF ECLIPSE.

Pocket chronometer.	Clock.	Washington ime.
h. m. s. b. 10 2 40 20	h. m. s. 19 55 19.05	h. m. s. 11 2 36.12
FORMATION OF RING.		
11 21 20 6	21 14 7.31	0 21 10.82
RUPTURE OF RING.		
11 22 40 2 50 5	21 15 25.93 37.17	0 22 29.23 40.67
END OF ECLIPSE.		
0 48 30 12 40 22 50 14	22 41 34.81 48.85 55.67	1 28 23.30 37.30 44.00

NOTE.—The pocket chronometer makes 25 beats in ten seconds, and the time is recorded in even ten seconds and beats thus, 40. 20 equals 48. 0.

I am satisfied Mr. VAN ARSDOL's chief difficulty in observing the ring arose from the fact that he used a dark screen glass, the same he had for the beginning and end of the eclipse. It was screwed to the eye-piece, and could not be readily detached, and no attempt was made to do so. It was so dark as in a measure quite to obscure the sun when cloudy. My own telescope had a sliding screen, with various shades of glass, and an opening, without screen of any kind, which opening was used in my observations of ring.

The Jergensen pocket chronometer and clock comparisons are as follows:

[MARCH 15.]

Chronometer.	Clock.
h. m. s.	h. m. s.
11 37 38.03	21 26 15.00
11 59 30.56	21 48 11.82

[MARCH 16.]

Chronometer.	Sidereal clock.
h. m. s.	h. m. s.
8 46 26.09	18 38 43.75
10 28 28.45	20 21 4.00
11 11 6.13	21 3 49.29
11 31 13.41	21 24 0.00
0 57 19.90	22 50 21.43
2 19 13.49	0 12 30.00
2 59 6.47	0 52 30.00

The approximate clock correction on the evening of March 15, at $9^h\ 0^m\ 0^s$ sidereal time, was $41^s.10$. My time observations are neither quite satisfactory nor fully reduced, nor have I been able to reduce my latitude observations; but the approximate latitude may be stated at 43° 29′ 12″.

OBSERVATIONS AT MOUNTAIN HOME.

The observer at Mountain Home was Mr. JOHN A. WORTHEN, assisted by Mr. H. B. PATTEN as time recorder. Messrs. WORTHEN and PATTEN were supplied with a marine chronometer, Breguet et fils, No. 4330, beating half seconds, and a draw telescope of 2.2 inches aperture, with erect eye-piece, power about 44. They were directed, if practicable, to observe all the phases of the eclipse, but especially the duration of the ring, and also to compare chronometer with Washington time-signals. A stop-watch was also supplied, to be used by an additional assistant for observing the duration of the ring.

Mr. PATTEN reported that on the 15th the time-signals did not come regularly until the latter part of the 57th minute, but thereafter clearly and distinctly, and that he recorded the following:

Washington.	Mountain Home.
h. m. s.	h. m. s.
11 58 00	10 58 4.9
58 30	58 34.9
59 00	59 4.9
59 30	59 34.9
12 00 00	11 00 4.9

On the 16th he failed entirely to recognize or record any signals, as they came too irregularly.

Learning this fact by telegraph shortly after the end of the eclipse, I arranged to exchange signals with him from Kuna. This was done by sending a make-circuit signal from Kuna every tenth second for a whole minute, and then sending like signals back from Mountain Home for a whole minute, using the Jergensen pocket chronometer at Kuna and the marine chronometer at Mountain Home, with the following results:

KUNA TO MOUNTAIN HOME.

Kuna.	Mountain Home.
h. m. s.	h. m. s.
2 40 00	2 39 49.4
10	39 59.3
20	40 9.2
30	40 19.1
40	40 29.1
50	40 39.1
60	40 49.1
2 40 30	2 40 19.19
RETURN SIGNALS.	
h. m. s.	h. m. s.
2 44 11.8	2 44 00
44 21.2	10
44 31.2	20
44 41.0	30
44 00.0	40
45 1.0	50
45 10.8	60
2 44 41.14	2 44 30

The Jergensen chronometer was compared with the Kuna clock both before and after the signals were sent, from all of which is deduced:

$2^h\ 42^m\ 35^s.57$ of Jergensen equals $2^h\ 42^m\ 24^s.59$ marine chron.
$0^h\ 35^m\ 54^s.45$ sidereal clock.
$3^h\ 42^m\ 23^s.36$ Wash. time.

The marine chronometer has lost $3^s.67$ in 1.154 mean solar day, or $3^s.18$ in one day.

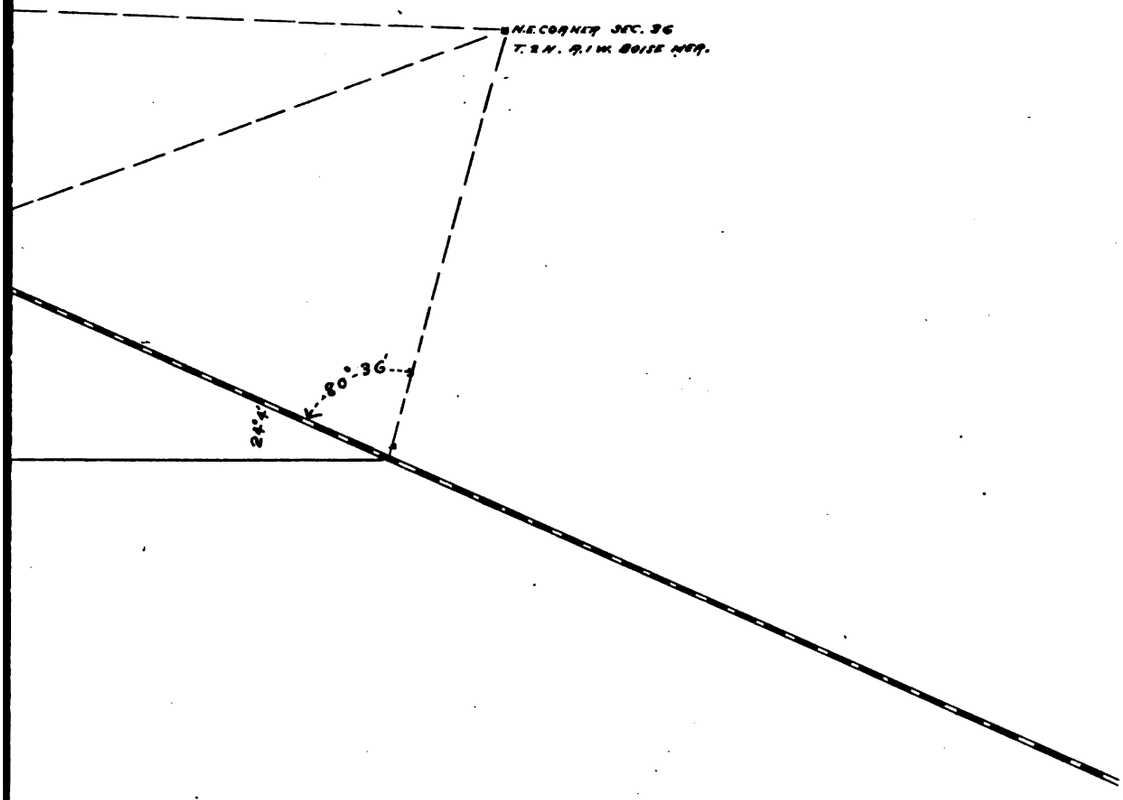
The contacts were observed at Mountain Home as follows:

	Chronometer time.	Washington time.
	h. m. s.	h. m. s.
Beginning of eclipse	10 2 40.4	11 2 38.55
Formation of ring	11 22 9.5	0 22 7.93
Rupture of ring	11 22 34.4	0 22 32.83
End of eclipse obscured by clouds.		

VICINITY OF KUNA

g position of point of observation.

of Eclipse March 16th 1885.



Other parties were stationed at Cleft and Canon Creek, eastward from Kuna, and at Parma, Nyssa, and Old Ontario, westward from Kuna. They were supplied with draw telescopes from 1½ to 1¾ inches clear aperture, magnifying from 24 to 36 diameters, and with stop-watches, and directed to observe as accurately as possible the duration of the ring. Some of them had time-pieces of their own and made observations in duplicate. The duration of the ring as observed by these parties and at Mountain Home was as follows:

Place.	Duration of ring.
	s.
Mountain Home	24.9
Canon Creek	59.6
Cleft	71.6
Parma	99.25
Nyssa	59.50
Old Ontario	46.7

Mr. BLICKENSDERFER received reports from his assistants as follows:

From Mr. FRANK BRUEN, at Parma—

[Ninetieth meridian time.]

	h.	m.	s.
First contact	10	3	38.5
Fourth contact	12	47	29¾
Duration of annulus		1	39¼

At second contact, sun partly obscured by clouds; fairly distinct outline; bright line seemed to be parted into two concentric fine lines, sharp pointed at approaching ends.

At third contact, sun partly obscured by light clouds; line beaded or divided into several parts one and a half seconds before I called time.

Also from Mr. F. W. BLACKFORD, at Cleft; Mr. F. S. BOWEN, at Canon Creek; Mr. EDWARD BRADDOCK, at Nyssa; Mr. W. F. SHELTON, at Nyssa, whose observations were not complete owing to the weather and various other circumstances.

REPORT OF MR. WILLIAM H. KINNON.

BISMARCK, DAKOTA, *March* 18, 1885.

DEAR SIR: In view of the circular sent out by you, soliciting the observance of the solar eclipse and its effects upon the atmosphere, &c., which took place on Monday,

March 16, 1885, I send you the following. The observations were taken by Messrs. C. S. BENNETT, G. N. SALISBURY, of the United States Signal Corps, and myself. We were equipped with carefully-smoked glass, a mercurial thermometer, which was so placed in the air as to be entirely exposed to the sun, and a mercurial barometer. Our time-pieces were corrected to agree exactly with the time as sent out from the Naval Observatory but a short time before the commencement of the eclipse. We were stationed on the roof of the building in which the signal office is located, and a better place could not have been afforded. The entire morning was clear, calm, and cold; but a few clouds visible.

The eclipse began at $11^h\ 27^m\ 15^s$ a. m.

Temperature at commencement of eclipse, $-3^\circ.3$.

Barometer, $30^{in}.50$.

The greatest obscuration, $12^h\ 52^m$ p. m.

Temperature at time of greatest obscuration, $-7^\circ.2$.

Barometer, $30^{in}.534$.

At this time the light of the sun was probably one-fifth of that given on a clear day. A high and peaked hill about 20 miles distant was visible, notwithstanding the light being gloomy.

The shadow left the sun's disk at $2^h\ 18^m\ 10^s$ p. m.

Temperature at time shadow left sun's disk, $-1^\circ.6$.

Barometer at time shadow left sun's disk, $30^{in}.538$.

Mr. BENNETT took readings of the thermometer and barometer at intervals of 15 minutes from the commencement until the end of the eclipse, as follows. The barometer readings are reduced to sea-level.

Time.	Barometer.	Thermometer.
	in.	°
11. 27 a. m.	30. 507	— 3. 0
11. 42 a. m.	30. 511	— 2. 2
11. 57 a. m.	30. 515	— 2. 1
12. 12 p. m.	30. 529	— 1. 8
12. 27 p. m.	30. 530	— 4. 0
12. 42 p. m.	30. 533	— 5. 1
12. 57 p. m.	30. 366	— 7. 1
1. 12 p. m.	30. 540	— 6. 1
1. 27 p. m.	30. 537	— 5. 6
1. 42 p. m.	30. 544	— 4. 5
1. 57 p. m.	30. 543	— 4. 8
2. 12 p. m.	30. 540	— 2. 4

Hoping this report will be of some good to you, I remain yours, truly,

WILLIAM H. KINNON

S. R. FRANKLIN,

Rear-Admiral, U. S. Navy.

REPORT OF MR. G. F. GOODHUE

BOZEMAN, *March* 16, 1885.

DEAR SIR: Your circulars, giving instructions about receiving time from Washington, and also explaining the eclipse, came to hand some time ago. Many thanks for same. We received time yesterday and to-day at 10 o'clock a. m., our time, 105th meridian, and our clock stood the same as when Saint Paul gives time each day. I am sorry to say we were not able to see much of the eclipse on account of a thick snow-storm here. We could not see the sun at all until it was about one-third covered. This was about 10:10. Saw it again when about two-thirds covered. Should think the total must have been about 10:30 or 35. We could not see it then, but several of us compared watches at 10:25 and it was very nearly covered then. Did not see it at all again until the shadow had crossed, and about one-third of the sun in sight. This was about 11:10, when we lost sight of it entirely until it was very nearly over. Could not see it plainly enough after this to tell anything about it. It was quite dark from about 10:25 to 10:35. At this time, 11:45, is still snowing, but is very fine, and looks as if the storm was nearly over. Was snowing quite hard from 7 a. m.; about 9 was quite light, but soon thickened up, and where the clouds had been broken became very thick and even looking like one big gray cloud all over us, and so thick could not penetrate at all with field-glasses. Seems too bad we should have such weather to-day, as it has been fine for the past ten or fifteen days, except yesterday, which was a little cloudy, though very pleasant.

Yours, very truly,

G F. GOODHUE,
Operator, N. P. Depot.

S. R. FRANKLIN,
Rear-Admiral, U. S. Navy,
Supt. U. S. Naval Observatory, Washington, D. C.

REPORT OF MR. WILLIAM HOOD.

SAN FRANCISCO, CAL., *March* 19, 1885.

DEAR SIR: Your several circulars, with reference to annular eclipse of the sun, were received in due season and were distributed to the best advantage possible. I have had careful observations made by one of my assistants, whose report I inclose herewith, and which, I trust, may prove satisfactory to you.

Very respectfully, yours, etc.,

WILLIAM HOOD,
Chief Engineer, C. P. R. R.

S. R. FRANKLIN,
Rear-Admiral, U. S. Navy,
U. S. Naval Observatory, Washington, D. C.

SAN FRANCISCO, *March* 18, 1885.

DEAR SIR: In accordance with your instructions, observations of the annular eclipse of the sun, which occurred on the 16th inst., were taken at Delta Station, on the Oregon Division of the Central Pacific Railroad.

Subjoined you will find a report of such observations as the instruments at command enabled the observers to make.

ECLIPSE REPORT.

Station: Delta, Oregon Division Central Pacific Railroad, California.

Latitude (approx.): 40° 56′ 16″.7 north latitude.

Longitude (approx.): 122° 24′ 58″.3 west longitude.

Latitude and longitude determined from data of United States public land surveys.

First contact: Obscure and of no value.

Second contact: 9^h 07^m 09^s, actual observed time.

Third contact: 9^h 09^m 06^s, actual observed time.

Fourth contact: 10^h 32^m 43^s, actual observed time.

Watch error, by comparison with signals from Observatory at Washington, 3^h 1^m 11^s slow of 75th meridian time, as transmitted on March 16, or 01^m 11^s slow of 120th meridian time.

Instrument used: Engineer's transit.

Objective diameter: One inch.

Power: 22 diameters.

Observer: D. S. PALMER.

Recorder: C. H. ROCKWELL.

REMARKS.

The time-signals on the 15th instant, transmitted from Washington, were very good. On the 16th they were poor, but correct time was obtained from Sacramento, where a good comparison had been made with the time-signals.

The shadow as viewed from Delta was central, as nearly as could be ascertained.

The duration of the annular phase was 1^m 57^s, and during this time the diminution of light from the sun was very perceptible, causing heavy shadows, and imparting a strong yellowish tinge to the whole landscape. But the portion of the sun exposed was too bright to admit of the visibility of the corona, and the power used was too low to observe anything except contacts, no irregularities of the edge of the moon being perceptible.

The first contact took place about 7^h 52^m 00^s, but was uncertain, and the time is of no value as an exact observation.

Respectfully submitted.

D. S. PALMER,
Asst. Eng. C. P. R. R.

MR. WM. HOOD,
Chief Engineer Central Pacific Railroad.

REPORT OF MR. F. HESS.

FORT DODGE, IOWA, *March* 17, 1885.

Rear-Admiral S. R. FRANKLIN,
Superintendent U. S. Naval Observatory,
Washington, D. C.

SIR: In response to your circular of February 19 last, concerning the eclipse of the sun on March 16, I have the honor to report that, although the sky was not perfectly clear at this place, and the day was uncomfortably cold and blustering, the eclipse was distinctly visible here during its entire duration from $10^h\ 29^m\ 46^s.3$ a. m., to $1^h\ 26^m\ 27^s.7$ p. m., central standard time, and that I did what I could to obtain these times as accurately as possible under the circumstances and with the means of observation at my command. These were a common stop-watch, a small surveyor's transit instrument, a sextant, and a spy-glass of 2⅝ inch aperture, and a magnifying power of 50; and my place of observation was 2,750 feet north and 680 feet east from the court-house at this place, where I observed the transit of Mercury in 1878, and the geographical position of which I then determined to be $1^h\ 8^m\ 30^s \pm$ west of Washington, in north latitude 42° 31′.2.

I made timely application at the Western Union telegraph office here for the promised Washington time-signals, and was assured that all the necessary arrangements for their reception on the 15th and 16th instant would be made, and I was on hand in due time on each of these days to observe the same; but on account of some real or pretended derangement of the wires no signals came on either day, so that for the error and rate of my watch I had to rely exclusively on my own observations of local time, which were as follows:

Equal altitudes of Sun's upper and lower limbs, observed with sextant and artificial horizon.

March 13, 1885.

A. M.			Alt.	P. M.		
h.	m.	s.	°	h.	m.	s.
9	45	18.0	65	3	5	32.2
9	49	11.0	66	3	1	42.2
9	52	34.5	67	2	58	17.0
9	56	26.4	68	.	.	. . . . .
10	0	3.1	69	2	50	45.5
10	4	9.7	70	2	46	41.5

Transit observations over an approximate meridian obtained from an observation of Polaris at the western elongation the previous evening.

[Errors of instrument unknown.]

Date.	Name of star.	Time.	Finding—Alt.
1885.		h. m. s.	° ′
March 13	Venus	11 38 35.1	38 31
	Sun's I L.	12 24 45.8	. .
	Sun's II L. . . .	12 26 54.8	43 56
March 14	Sirius	7 24 34.8	31
	ε Canis Majoris . .	7 38 39.0	18 45
	δ Canis Majoris . .	7 48 13.8	21 20
	Procyon	8 17 33.0	53
	15 Argus	8 47 1.0	23 34
March 15	Sirius	7 21 3.6	. .
	ε Canis Majoris . .	7 35 7.0	. .
	δ Canis Majoris . .	7 44 41.0	. .
	Procyon	8 14 2.0	. .
	15 Argus	8 43 26.6	. .
	α Hydræ	10 2 22.5	30 19

Double altitudes of Sun.

March 15, 1885.

A. M.	Alt.	P. M.
h. m. s.	°	h. m. s.
8 36 24.2	45	4 13 41.8
8 39 35.0	46	4 10 22.0
9 0 51.2	53	3 49 7.5
9 4 15.5	54	. . . . .
9 7 13.5	55	3 42 44.5
9 10 37.0	56	3 39 26.0
9 13 36.3	57	3 36 21.8
9 17 3.1	58	3 32 56.0

March 16, 1885.

A. M.	Alt.	P. M.
h. m. s.	°	h. m. s.
9 21 30.5	60	3 29 7.0
. . . . .	61	3 25 36.2
9 28 8.0	62	3 22 30
9 31 46.0	63	3 18 56
9 34 56.8	64	3 15 42.6
9 38 34.0	65	3 12 2.5
9 41 54	66	3 8 45.4
9 45 35.5	67	3 5 5.0

March 16.—Commenced looking for the beginning of the eclipse at 10:27 by my watch, and noticed through large glass, with power of 50 times, a group of faculæ and one oblong sun spot very near the sun's western limb, a short distance below the calculated place of 1st contact; also a group of small spots and one large one near the middle of the sun's disc.

	h.	m.	s.	
Observed 1st contact at.....	10	30	0.0	by watch;
Disappearance of spot at.....	10	39	13.5	by watch;

then went to telegraph-office down town for Washington time-signals, which did not come.

During my absence County Surveyor F. L. EASLEY, who assisted me, and also made some independent observations with his own transit, noted the disappearance of the central group of spots at $11^h\ 9^m$, and their reappearance I noted at 12:38. I also observed the transit of sun and moon over my temporary meridian as follows:

	h.	m.	s.
Sun I.....	12	24	36
Moon II	12	26	6
Sun II.....	12	26	31

and the last contact at $1^h\ 26^m\ 45^s.5$ by watch, the probable error of which was $12^s.7$ fast on central standard time at the beginning and $17^s.8$ fast at the end of the eclipse.

These observations and notations were made by me without any assistance except during the progress of the eclipse, and, while I may have noted the wrong minute in some instances, the seconds taken at leisure from the arrested large second-hand of my watch I believe to be reliable in every case. I have made no attempt whatever to reconcile any apparent discrepancies between some of the preceding figures, which are given here for what they are worth, just as they were originally noted by me at the time, and hoping that, while of no special value to science, they may be of some practical use,

I am, sir, very respectfully, your obedient servant,

F. HESS.

REPORT OF FRANCIS D. JONES.

HELENA, MONTANA, *March* 20, 1885.

F. HESS, Esq.,
Fort Dodge, Iowa:

MY DEAR SIR: I am sorry to say that I have very little to report save a series of disheartening non-accomplishments of desired ends. I send you a report of that part of the eclipse that was visible.

The whole week prior to the eclipse was lovely—not a cloud; Sunday morning brought a few clouds, the forerunners of the veil that covered the whole of the heavens on March 16.

To Mr. DAY, local manager of the Western Union, we are indebted. He had the through wire cut at Toston (where we were stationed) on the morning of the 16th, he himself coming down on the extra train (furnished by the railway company). He soon had his instrument connected, and we patiently watched the sun and waited for the time-signals. It was a peculiar day, with a very muggy atmosphere.

	h.	m.	s.
First internal contact	10	32	34
Annularity	10	33	34
Second internal contact	10	34	34

By a mean-time chronometer, 4 seconds slow of 105th meridian time, observations corrected.

	°	′	″	
Latitude of Toston	46	10	15.16	north.
Longitude of Toston	111	26	17.51	west.

Yours, very truly,

FRANCIS D. JONES.

REPORT OF MR. S. N. GRIFFITH.

JAMESTOWN, DAKOTA, *March* 20, 1885.

DEAR SIR: By the courtesy of T. F. OAKES, vice-president and general manager of the Northern Pacific Railroad, I was provided with passes and your description of time-signals of November 10, 1883, and your circular of February 19, 1885.

I reached Bozeman, Montana, on Saturday, March 14, and made arrangements to get the time on Sunday, which was accomplished.

On Monday morning, the 16th instant, it was cloudy. The sun was only occasionally and partially visible. At 9:30, Bozeman true time, the sun appeared to be about five digits eclipsed. At 10:00 o'clock it was snowing. At 10:15 was the greatest apparent darkness; the sun entirely disappeared. At 10:40 it reappeared through a haze, four digits eclipsed. At 11:18, as nearly as I could tell, the shadow disappeared

Yours, truly,

S. N. GRIFFITH.

S. R. FRANKLIN,
U. S. Naval Observatory.

REPORT OF MR. W. W. AUSTIN.

RICHMOND, INDIANA, *March* 16, 1885.

U. S. Naval Observatory, Washington, D. C.:

The solar eclipse was visible at times here through openings of snow-clouds till about 11:30 a. m.; after that dense snow-clouds and falling snow obscured any view.

Respectfully,

W. W. AUSTIN.

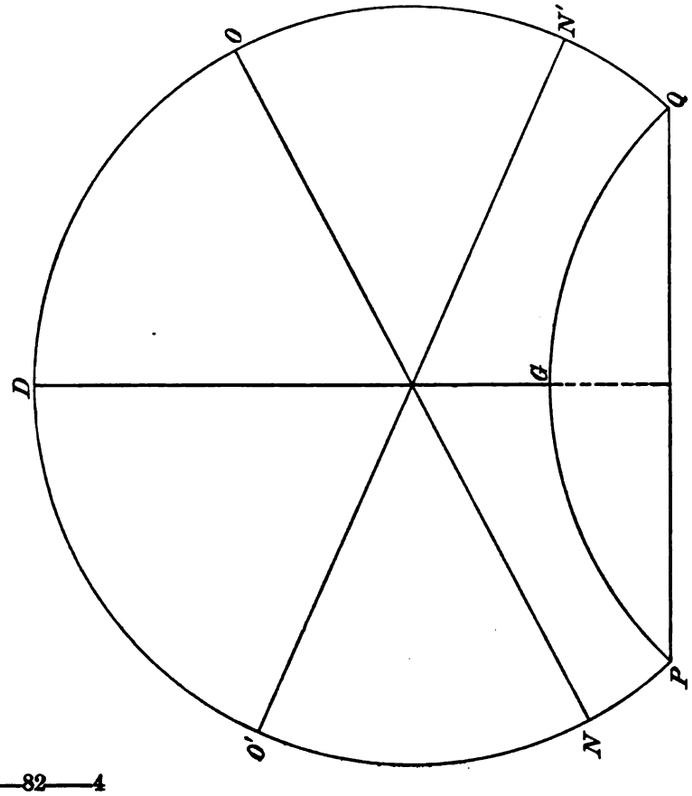
Reports were also received from Miss EMMA L. MUERNER, Naperville, Illinois; Mr. W. WINGER, Cleveland, Ohio; Mr. F. T. TAYLOR, Tacoma, Washington; together with photographs from Mr. BAYNE, Grand Rapids, Michigan; Mr. GEORGE L. HEATH, Hastings, Michigan; Mr. GEORGE P. LOVEGROVE, Lakeview, Oregon.

The following tables give the readings on the measuring engine, taken by Ensigns HOGG and TAYLOR, designated H and T respectively, the readings of the latter being in each case the mean of three settings, while the readings of the former are from a single setting only, except when otherwise specified. The final values for the lines in question were obtained by combining the measures of the two observers by the formulæ $\frac{3T + H}{4}$, $\frac{3T + 2H}{5}$, and $\frac{T + H}{2}$, where Mr. HOGG had taken the reading from one, two, or three independent settings.

The lines measured can be readily found by a reference to the accompanying diagram, P Q being the line of cusps; D G that part of the line perpendicular to and bisecting P Q, which is embraced between the sun's and moon's limbs; N O, N′ O′, two diameters, chosen so as to have one extremity near a cusp.

The measurements were all taken with scale A, the errors of which have been very accurately determined by Professor HARKNESS, as stated in Vol. XXIV, Washington Astronomical Observations for 1877, Superintendent's Report. The corrections were furnished by him.

Diagram showing position of lines measured.



As will be seen by an inspection of the table of times of exposure, gelatine plates 1 to 7, and collodion plates 105 to 148 inclusive, were taken during the first 6 minutes of the eclipse; gelatine plates 44 to 49, and collodion plates 87 and 88 during the last 9 minutes.

The following measures were made for the determination of the distance of the back surface of the photographic objective from the sensitive film, viz:

	in.
From the back surface of the objective to the front surface of the reticule plate	465.00
From the front surface of the reticule plate to the sensitive film	0.430
Sum	465.430
To this sum must be added for the distance of the second principal point of the objective from its back surface.	0.682
And this gives for the required distance on the day of the eclipse	466.112

The measure from the front surface of the reticule plate to the sensitive film, was obtained as follows: A negative having been clamped in its proper position in rear of the reticule plate, Mr. GARDNER set a pair of calipers over each corner, one leg touching the front surface of the reticule plate, the other the back surface of the negative. The following measures were obtained:

I.

	in.
Upper right-hand corner	0.500
Upper left-hand corner	0.500
Lower right-hand corner	0.498
Lower left-hand corner	0.495

The negative was next taken off, and its thickness measured at the same corners. These measures gave:

II.

	in.
Upper right-hand corner	0.070
Upper left-hand corner	0.065
Lower right-hand corner	0.070
Lower left-hand corner	0.068

The measures in II are next applied to those in I, respectively, and the result gives the distance required as follows:

III.

	in.
Upper right-hand corner	0.430
Upper left-hand corner	0.435
Lower right-hand corner	0.428
Lower left-hand corner	0.427
Mean distance	0.430

These measures were all taken at a temperature of 52° F., and are uncorrected for temperature.

Chronometers.

	m. s.
Recording on chronograph, sidereal break-circuit chronometer, Negus 1295, correction to Washington sidereal time	+ 8 17.45
Commander BROWN's record by "eye and ear" in photograph-house, sidereal Hack chronometer, Chadwick 386, correction to Washington sidereal time	— 26 2.54
Length of one division of scale of measuring-engine at 68° F.	$0^{in}.01989$
Temperature of photograph-house at beginning of eclipse (first 6 minutes)	54° F.
Temperature of photograph-house at end of eclipse (last 9 minutes)	58° F.

Photographs of Sun's Annular Eclipse.

No.	Observer.	Remarks.
1	H.	Cusps very poorly defined.
	T.	Sun's limb uneven; good seeing.
105	H.	Image indistinct.
	T.	Fair plate; cusps difficult.
2	H.	
	T.	Good seeing; limb of sun not well defined at all points.
106	H.	Cusps badly defined; light good.
	T.	Good light for E. side of plate; poor for W. side.
3	H.	Light and image good.
	T.	Tolerable plate; good seeing.
107	H.	Cusps poorly defined; light good.
	T.	Good seeing; plate indistinct at edges.
4	H.	Light good; image very indistinct; difficult to make contacts.
	T.	Poor plate; passing clouds when taken; good seeing.
108	H.	
	T.	Excellent plate; good seeing.
5	H.	Image indistinct; light and contact good.
	T.	Good seeing; cusps well defined.
146	H.	Cusps badly defined; other conditions good.
	T.	Difficult to determine limb of sun; good seeing.
6	H.	Cusps not well defined; light good.
	T.	Good seeing; one cusp not clearly cut.
147	H.	Cusps poorly defined; other conditions good.
	T.	Good seeing; good plate, in my judgment.
7	.	
	T.	Plate not very good.
148	H.	
	T.	Good seeing; plate tolerable.
44	H.	Very good conditions as to light and image.
	T.	Good seeing.
45	H.	Best of all photographs.
	T.	Plate tolerable; cusps and seeing good.
46	H.	Conditions good.
	T.	Good plate; cusps well defined; good seeing.
47	H.	
	T.	Good plate.
87	H.	Image indistinct.
	T.	Almost impossible to measure; faint.
48	H.	Light and image good.
	T.	Cusps well defined; seeing good.
88	H.	One cusp indistinct.
	T.	Measurements have small weight, except the two diameters, which are chosen so as to give a clear-cut image of sun; good seeing.
49	H.	Light and image good.
	T.	Excellent plate.

Time of Exposure by Chronometer and Chronograph.

No.	Kind of film.	Time of exposure by—		Time between exposures by—	
		Chronometer.	Chronograph.	Chronometer.	Chronograph.
		h. m. s.	h. m. s.	m. s.	m. s.
1	Gelatine . . .	0 1 2	23 26 42.3		
105	Collodion . .	1 36.5	27 16.5	0 34.5	0 34.2
2	Gelatine . . .	2 5	45.1	28.5	28.6
106	Collodion . .	31.5	28 11.7	26.5	26.6
3	Gelatine . . .	56	36	24.5	24.3
107	Collodion . .	3 42	29 22.3	46	46.3
4	Gelatine . . .	4 2.5	42.3	20.5	20.0
108	Collodion . .	24	30 3.9	21.5	21.6
5	Gelatine . . .	42.5	23.2	18.5	19.3
146	Collodion . .	5 6.5	46.5	24.0	23.3
6	Gelatine . . .	30	31 10	23.5	23.5
147	Collodion . . .	50	30.2	20	20.2
7	Gelatine . . .	6 13.5	53.4	23.5	23.2
148	Collodion . .	7 13	32 53.3	59.5	59.9
44	Gelatine . . .	2 28 16	1 52 56.8		
45	Gelatine . . .	34 46.5	59 26.3	6 30.5	6 29.5
46	Gelatine . . .	35 23	2 0 3.1	0 36.5	0 36.8
47	Gelatine . . .	36 8.5	49.9	45.5	46.8
87	Collodion . .	27.5	1 7.6	19.0	17.7
48	Gelatine . . .	46	25.9	18.5	18.3
88	Collodion . .	37 9	49	23	23.1
49	Gelatine . . .	29.5	2 9.2	20.5	20.2

Line N O.

No. and observer.	Kind of film.	Setting on N.	Corr.	Corr. setting on N.	Setting on O.	Corr.	Corr. setting on O.	Length N O.	$\frac{3T+H}{4}$	Remarks.
1 H.	Gelatine .	83. 240	—. 020	83. 220	301. 610	—. 004	301. 606	218. 386	. . .	
1 T.	Gelatine .	82. 89	—. 020	82. 870	301. 523	—. 004	301. 519	218. 649	218. 583	Sun's limb uneven.
105 H.	Collodion .	83. 190	—. 020	83. 170	301. 350	—. 004	301. 346	218. 176	. . .	Limb of sun not well defined at all points.
105 T.	Collodion .	82. 60	—. 020	82. 580	301. 373	—. 004	301. 369	218. 789	218. 636	
2 H.	Gelatine .	82. 780	—. 020	82. 760	301. 250	—. 004	301. 246	218. 486	. . .	
2 T.	Gelatine .	82. 463	—. 020	82. 443	301. 480	—. 004	301. 476	219. 033	218. 896	
106 H.	Collodion .	83. 020	—. 020	83. 000	301. 790	—. 004	301. 786	218. 786	. . .	
106 T.	Collodion .	82. 600	—. 020	82. 580	301. 343	—. 004	301. 339	218. 759	218. 766	
3 H.	Gelatine .	82. 730	—. 020	82. 710	301. 360	—. 004	301. 356	218. 646	. . .	
3 T.	Gelatine .	82. 120	—. 020	82. 100	301. 107	—. 004	301. 103	219. 003	218. 914	
107 H.	Collodion .	82. 090	—. 020	82. 070	300. 400	—. 004	300. 396	218. 326	. . .	
107 T.	Collodion .	82. 760	—. 020	82. 740	301. 777	—. 004	301. 773	219. 033	218. 856	Plate indistinct at edges.
4 H.	Gelatine .	82. 760	—. 020	82. 740	301. 110	—. 004	301. 106	218. 366	. . .	Difficult to make contacts.
4 T.	Gelatine .	82. 167	—. 020	82. 147	301. 200	—. 004	301. 196	219. 049	218. 878	
108 H.	Collodion .	82. 770	—. 020	82. 750	301. 240	—. 004	301. 236	218. 486	. . .	
108 T.	Collodion .	82. 653	—. 020	82. 633	301. 197	—. 004	301. 193	218. 560	218. 542	
5 H.	Gelatine .	82. 970	. 020	82. 950	302. 300	—. 004	302. 296	219. 346	. . .	
5 T.	Gelatine .	83. 140	—. 020	83. 120	302. 471	—. 004	302. 467	219. 347	219. 347	
146 H.	Collodion .	82. 780	—. 020	82. 760	301. 240	—. 004	301. 236	218. 476	. . .	
146 T.	Collodion .	82. 610	—. 020	82. 590	301. 407	—. 004	301. 403	218. 813	218. 729	Difficult to determine limb of sun.
6 H.	Gelatine .	81. 890	—. 020	81. 870	301. 720	—. 004	301. 716	219. 846	. . .	
6 T.	Gelatine .	82. 513	—. 020	82. 493	302. 053	—. 004	302. 049	219. 556	219. 629	
147 H.	Collodion .	83. 020	—. 020	83. 000	301. 450	—. 004	301. 446	218. 446	. . .	
147 T.	Collodion .	82. 660	—. 020	82. 640	301. 533	—. 004	301. 529	218. 889	218. 778	
7 H.	Gelatine .	82. 850	—. 020	82. 830	301. 230	—. 004	301. 226	218. 396	. . .	
7 T.	Gelatine .	82. 587	—. 020	82. 567	301. 560	—. 004	301. 556	218. 989	218. 841	
148 H.	Collodion .	82. 600	—. 020	82. 580	301. 120	—. 004	301. 116	218. 536	. . .	
148 T.	Collodion .	83. 030	—. 020	83. 010	301. 683	—. 004	301. 679	218. 669	218. 636	
44 H.	Gelatine .	82. 680	—. 020	82. 660	301. 200	—. 004	301. 196	218. 536	. . .	
44 T.	Gelatine .	82. 757	—. 020	82. 737	301. 583	—. 004	301. 579	218. 842	218. 766	
45 H.	Gelatine .	82. 620	—. 020	82. 600	300. 900	—. 004	300. 896	218. 296	. . .	
45 T.	Gelatine .	83. 107	—. 020	83. 087	301. 857	—. 004	301. 853	218. 766	218. 649	
46 H.	Gelatine .	82. 700	—. 020	82. 680	301. 530	—. 004	301. 526	218. 846	. . .	
46 T.	Gelatine .	82. 683	—. 020	82. 663	301. 853	—. 004	301. 849	219. 186	219. 101	
47 H.	Gelatine .	82. 970	—. 020	82. 950	301. 220	—. 004	301. 216	218. 266	. . .	
47 T.	Gelatine .	82. 547	—. 020	82. 527	301. 213	—. 004	301. 209	218. 682	218. 578	
87 H.	Collodion .	81. 240	—. 020	81. 220	300. 000	—. 004	299. 996	218. 776	. . .	
87 T.	Collodion .	81. 710	—. 020	82. 690	300. 143	—. 004	300. 139	218. 449	218. 531	Almost impossible to measure.
48 H.	Gelatine .	83. 110	—. 020	83. 090	301. 590	—. 004	301. 586	218. 496	. . .	
48 T.	Gelatine .	82. 310	—. 020	82. 290	301. 140	—. 004	301. 136	218. 846	218. 759	
88 H.	Collodion .	82. 970	—. 020	82. 950	301. 520	—. 004	301. 516	218. 566	. . .	
88 T.	Collodion .	83. 007	—. 020	82. 987	301. 840	—. 004	301. 836	218. 849	218. 778	N O chosen so as to give clear cut image of sun.
49 H.	Gelatine .	83. 090	—. 020	83. 070	301. 810	—. 004	301. 806	218. 736	. . .	
49 T.	Gelatine .	82. 417	—. 020	82. 397	301. 500	—. 004	301. 496	219. 099	219. 008	

Line N′O′.

No. and observer.	Kind of film.	Setting on N′	Corr.	Corr. setting on N′	Setting on O′	Corr.	Corr. setting on O′	Length N′O′	$\frac{3T+H}{4}$	Remarks.
1 H.	Gelatine	83.290	—.020	83.270	301.580	—.004	301.576	218.306	. . .	
1 T.	Gelatine	82.590	—.020	82.570	301.430	—.004	301.426	218.856	218.719	Sun's limb uneven.
105 H.	Collodion	82.820	—.020	82.800	300.850	—.004	300.846	218.046	. . .	
105 T.	Collodion	82.867	—.020	82.847	301.367	—.004	301.363	218.516	218.399	
2 H.	Gelatine	82.910	—.020	82.890	301.360	—.004	301.356	218.466	. . .	Limb of sun not well defined at all points.
2 T.	Gelatine	82.800	—.020	82.780	301.677	—.004	301.673	218.893	218.786	
106 H.	Collodion	82.940	—.020	82.920	301.550	—.004	301.546	218.626	. . .	
106 T.	Collodion	82.640	—.020	82.620	301.423	—.004	301.419	218.799	218.756	
3 H.	Gelatine	82.910	—.020	82.890	301.620	—.004	301.616	218.726	. . .	
3 T.	Gelatine	82.310	—.020	82.290	301.297	—.004	301.293	219.003	218.934	
107 H.	Collodion	82.280	—.020	82.260	300.530	—.004	300.526	218.266	. . .	
107 T.	Collodion	82.627	—.020	82.607	301.517	—.004	301.513	218.906	218.746	Plate foggy at edges.
4 H.	Gelatine	82.930	—.020	82.910	301.250	—.004	301.246	218.336	. . .	Difficult to make contacts.
4 T.	Gelatine	82.263	—.020	82.243	300.990	—.004	300.986	218.743	218.641	
108 H.	Collodion	83.050	—.020	83.030	301.320	—.004	301.316	218.286	. . .	
108 T.	Collodion	82.777	—.020	82.757	301.313	—.004	301.309	218.552	218.486	
5 H.	Gelatine	82.860	—.020	82.840	302.140	—.004	302.136	219.296	. . .	Contacts good.
5 T.	Gelatine	82.593	—.020	82.573	302.253	—.004	302.249	219.676	219.581	
146 H.	Collodion	82.750	—.020	82.730	301.330	—.004	301.326	218.596	. . .	
146 T.	Collodion	82.387	—.020	82.367	301.373	—.004	301.369	219.002	218.901	Difficult to determine limb of sun.
6 H.	Gelatine	82.480	—.020	82.460	301.770	—.004	301.766	219.306	. . .	
6 T.	Gelatine	82.090	—.020	82.070	301.793	—.004	301.789	219.719	219.616	
147 H.	Collodion	82.730	—.020	82.710	300.990	—.004	300.986	218.276	. . .	
147 T.	Collodion	82.527	—.020	82.507	301.270	—.004	301.266	218.759	218.638	
7 H.	Gelatine	82.130	—.020	82.110	301.310	—.004	301.306	219.196	. . .	
7 T.	Gelatine	82.690	—.020	82.670	301.580	—.004	301.576	218.906	218.979	
148 H.	Collodion	82.330	—.020	82.310	300.870	—.004	300.866	218.556	. . .	
148 T.	Collodion	82.057	—.020	82.037	300.723	—.004	300.719	218.682	218.651	
44 H.	Gelatine	82.450	—.020	82.430	300.930	—.004	300.926	218.496	. . .	
44 T.	Gelatine	82.577	—.020	82.557	301.370	—.004	301.366	218.809	218.731	
45 H.	Gelatine	82.940	—.020	82.920	301.170	—.004	301.166	218.246	. . .	
45 T.	Gelatine	83.170	—.020	83.150	301.937	—.004	301.933	218.783	218.649	
46 H.	Gelatine	83.030	—.020	83.010	301.700	—.004	301.696	218.686	. . .	
46 T.	Gelatine	82.850	—.020	82.830	301.873	—.004	301.869	219.039	218.951	
47 H.	Gelatine	82.900	—.020	82.880	301.000	—.004	300.996	218.116	. . .	
47 T.	Gelatine	82.640	—.020	82.620	301.323	—.004	301.319	218.699	218.553	
87 H.	Collodion	81.770	—.020	81.750	300.620	—.004	300.616	218.866	. . .	
87 T.	Collodion	82.683	—.020	82.663	301.077	—.004	301.073	218.410	218.524	Almost impossible to measure.
48 H.	Gelatine	82.980	—.020	82.960	301.600	—.004	301.596	218.636	. . .	
48 T.	Gelatine	82.067	—.020	82.047	301.180	—.004	301.176	219.129	219.006	
88 H.	Collodion	82.710	—.020	82.690	301.170	—.004	301.166	218.476	. . .	
88 T.	Collodion	83.110	—.020	83.090	301.883	—.004	301.879	218.789	218.711	N′O′ chosen so as to give a clear-cut image of sun.
49 H.	Gelatine	82.990	—.020	82.970	301.810	—.004	301.806	218.836	. . .	
49 T.	Gelatine	82.327	—.020	82.307	301.330	—.004	301.326	219.019	218.973	

Line P Q.

No. and observer.	Kind of film.	Setting on P.	Corr.	Corr. setting on P.	Setting on Q.	Corr.	Corr. setting on Q.	Length P Q.	$\frac{3T+H}{4}$	Remarks.
1 H.	Gelatine .	186.090	+.021	186.111	196.820	+.022	196.842	10.731	. . .	Means of two settings.
1 T.	Gelatine .	187.017	+.021	187.038	196.330	+.022	196.352	9.314	9.881	Cusps very poorly defined.
105 H.	Collodion .	180.870	+.020	180.890	205.075	+.022	205.097	24.207	. . .	Means of two settings.
105 T.	Collodion .	180.373	+.020	180.393	205.900	+.022	205.922	25.529	25.000	Cusps difficult.
2 H.	Gelatine .	176.740	+.019	176.759	208.750	+.023	208.773	32.014	. . .	
2 T.	Gelatine .	175.027	+.019	175.046	207.497	+.023	207.520	32.474	32.359	
106 H.	Collodion .	172.770	+.018	172.788	210.650	+.022	210.672	37.884	. . .	Cusps badly defined.
106 T.	Collodion .	172.943	+.018	172.961	211.170	+.022	211.192	38.231	38.144	
3 H.	Gelatine .	171.210	+.018	171.228	212.450	+.022	212.472	41.244	. . .	
3 T.	Gelatine .	170.820	+.017	170.837	212.843	+.022	212.865	42.028	41.832	
107 H.	Collodion .	166.973	+.016	166.989	216.167	+.022	216.189	49.200	. . .	Means of 3 settings.
107 T.	Collodion .	167.250	+.017	167.267	216.633	+.022	216.655	49.388	49.294	Cusps poorly defined.
4 H.	Gelatine .	164.810	+.016	164.826	217.410	+.022	217.432	52.606	. . .	
4 T.	Gelatine .	164.867	+.016	164.883	217.343	+.022	217.365	52.482	52.513	
108 H.	Collodion .	163.590	+.015	164.605	218.410	+.022	218.432	53.827	. . .	
108 T.	Collodion .	163.857	+.015	163.872	219.433	+.022	219.455	55.583	55.144	
5 H.	Gelatine .	163.560	+.015	163.575	221.310	+.021	221.331	57.756	. . .	
5 T.	Gelatine .	163.643	+.015	163.658	221.350	+.021	221.371	57.713	57.724	Cusps well defined.
146 H.	Collodion .	161.150	+.015	161.165	221.150	+.021	221.171	60.006	. . .	Cusps badly defined.
146 T.	Collodion .	161.540	+.015	161.555	221.973	+.021	221.994	60.439	60.331	
6 H.	Gelatine .	160.720	+.014	160.734	222.990	+.021	223.011	62.276	. . .	Cusps not well defined.
6 T.	Gelatine .	160.643	+.014	160.657	223.120	+.021	223.141	62.484	62.432	One cusp not clearly cut.
147 H.	Collodion .	159.600	+.014	159.614	224.530	+.021	224.551	64.937	. . .	Cusps poorly defined.
147 T.	Collodion .	159.320	+.014	159.334	224.367	+.021	224.388	65.054	65.025	
7 H.	Gelatine .	158.030	+.014	158.044	224.440	+.021	224.461	66.417	. . .	
7 T.	Gelatine .	158.163	+.014	158.177	225.530	+.020	225.550	67.373	67.134	Clouds over one cusp.
148 H.	Collodion .	155.860	+.013	155.873	228.710	+.020	228.730	72.857	. . .	
148 T.	Collodion .	156.010	+.013	156.023	228.700	+.020	228.720	72.697	72.737	
44 H.	Gelatine .	137.390	+.005	137.395	246.980	+.010	246.990	109.595	. . .	
44 T.	Gelatine .	137.487	+.005	137.492	247.253	+.010	247.263	109.771	109.727	
45 H.	Gelatine .	150.080	+.011	150.091	232.950	+.018	232.968	82.877	. . .	
45 T.	Gelatine .	150.007	+.011	150.018	233.133	+.018	233.151	83.133	83.069	Cusps good.
46 H.	Gelatine .	151.640	+.011	151.651	231.430	+.019	231.449	79.798	. . .	
46 T.	Gelatine .	151.720	+.011	151.731	231.440	+.019	231.459	79.728	79.746	Cusps well defined.
47 H.	Gelatine .	154.180	+.012	154.192	229.380	+.019	229.399	75.207	. . .	
47 T.	Gelatine .	153.980	+.012	153.992	229.480	+.019	229.499	75.507	75.432	
87 H.	Collodion .	154.700	+.012	154.712	228.500	+.020	228.520	73.808	. . .	
87 T.	Collodion .	154.943	+.012	154.955	228.653	+.020	228.673	73.718	73.741	Almost impossible to measure.
48 H.	Gelatine .	156.180	+.013	156.193	227.820	+.020	227.840	71.647	. . .	
48 T.	Gelatine .	156.570	+.013	156.583	228.183	+.020	228.203	71.620	71.627	Cusps well defined.
88 H.	Collodion .	157.170	+.013	157.183	226.470	+.020	226.490	69.307	. . .	One cusp indistinct.
88 T.	Collodion .	157.227	+.013	157.240	226.253	+.020	226.273	69.033	69.102	Small weight.
49 H.	Gelatine .	158.510	+.014	158.524	225.560	+.020	225.580	67.056	. . .	
49 T.	Gelatine .	158.197	+.014	158.211	225.247	+.020	225.267	67.056	67.056	

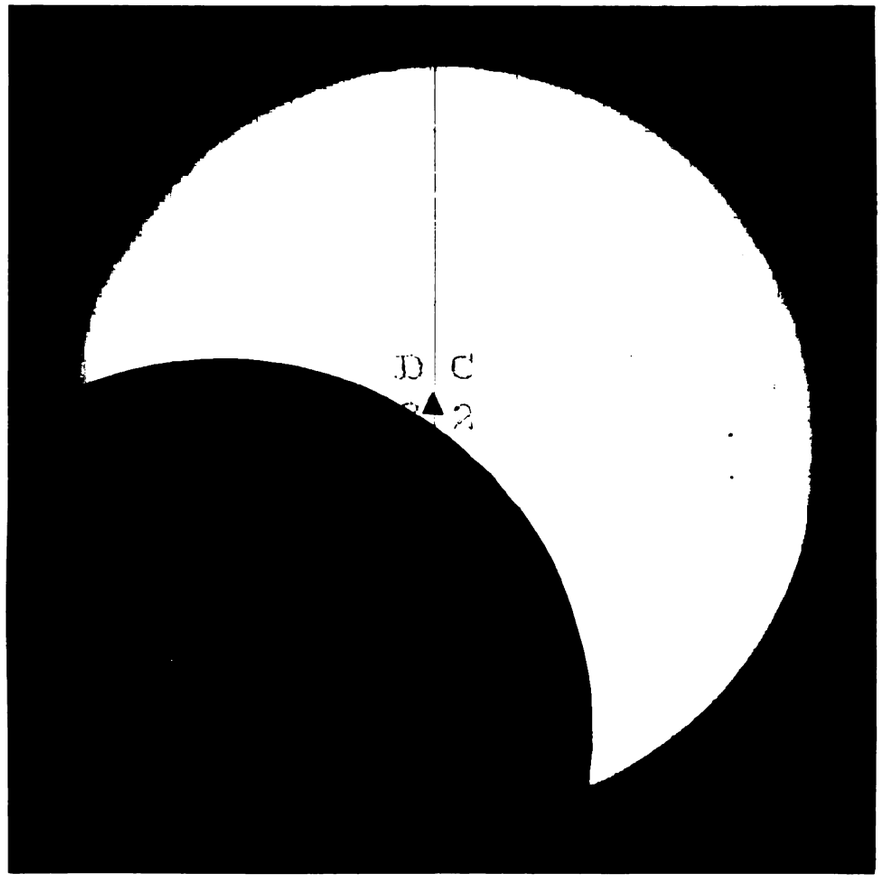
Line D G.

No. and observer.	Kind of film.	Setting on D.	Corr.	Corr. setting on D.	Setting on G.	Corr.	Corr. setting on G.	Length D G.	$\frac{3T+H}{4}$	Remarks.
1 H.	Gelatine	83.370	—.020	83.350	301.050	—.004	301.046	217.696	. . .	
1 T.	Gelatine	83.050	—.020	83.030	301.253	—.004	301.249	218.219	218.088	
105 H.	Collodion	83.210	—.020	83.190	299.820	—.004	299.816	216.626	. . .	Means of two settings.
105 T.	Collodion	82.540	—.020	82.520	299.827	—.004	299.823	217.303	217.032	
2 H.	Gelatine	81.560	—.020	81.540	297.750	—.003	297.747	216.207	. . .	
2 T.	Gelatine	84.997	—.020	84.977	301.640	—.004	301.636	216.659	216.546	
106 H.	Collodion	82.260	—.020	82.240	298.050	—.003	298.047	215.807	. . .	
106 T.	Collodion	85.783	—.019	85.764	301.747	—.004	301.743	215.979	215.936	
3 H.	Gelatine	79.060	—.020	79.040	293.910	—.002	293.908	214.868	. . .	
3 T.	Gelatine	82.127	—.020	82.107	297.113	—.003	297.110	215.003	214.969	
107 H.	Collodion	83.860	—.020	83.840	296.970	—.003	296.967	213.127	. . .	
107 T.	Collodion	82.590	—.020	82.750	295.750	—.002	295.748	213.178	213.165	
4 H.	Gelatine	79.190	—.020	79.170	291.390	—.002	291.388	212.218	. . .	
4 T.	Gelatine	89.390	—.018	89.372	301.433	—.004	301.429	212.057	212.097	
108 H.	Collodion	83.230	—.020	83.210	294.550	—.002	294.548	211.338	. . .	
108 T.	Collodion	89.740	—.018	89.722	301.270	—.004	301.266	211.544	211.493	
5 H.	Gelatine	81.710	—.020	81.690	293.740	—.002	293.738	212.048	. . .	
5 T.	Gelatine	81.723	—.020	81.703	293.987	—.002	293.985	212.282	212.224	
146 H.	Collodion	82.480	.020	82.460	292.780	—.002	292.778	210.318	. . .	
146 T.	Collodion	82.433	—.020	82.413	293.070	—.002	293.068	210.655	210.571	
6 H.	Gelatine	82.460	—.020	82.440	292.390	—.002	292.388	209.948	. . .	
6 T.	Gelatine	82.287	—.020	82.267	292.603	—.002	292.601	210.334	210.238	
147 H.	Collodion	82.850	—.020	82.830	291.590	—.002	291.588	208.758	. . .	
147 T.	Collodion	82.587	—.020	82.567	291.617	.002	291.615	209.048	208.976	
7 H.	Gelatine	82.670	.020	82.650	290.500	—.001	290.499	207.849	. . .	
7 T.	Gelatine	82.460	—.020	82.440	290.720	—.002	290.718	208.278	208.171	
148 H.	Collodion	83.260	—.020	83.240	289.140	—.001	289.139	205.899	. . .	
148 T.	Collodion	83.043	—.020	83.023	289.310	—.001	289.309	206.286	206.189	
44 H.	Gelatine	82.430	—.020	82.410	271.120	—.000	271.120	188.710	. . .	
44 T.	Gelatine	113.070	—.008	113.062	301.757	—.004	301.753	188.691	188.696	
45 H.	Gelatine	82.580	—.020	82.560	284.670	—.007	284.663	202.103	. . .	
45 T.	Gelatine	99.260	—.015	99.245	301.600	—.004	301.596	202.351	202.289	
46 H.	Gelatine	82.620	—.020	82.600	286.580	—.001	286.579	203.979	. . .	
46 T.	Gelatine	97.573	—.016	97.557	301.647	—.004	301.643	204.086	204.059	
47 H.	Gelatine	83.100	—.020	83.080	287.790	—.001	287.789	204.709	. . .	
47 T.	Gelatine	82.730	—.020	82.710	288.073	—.001	288.072	205.362	205.199	
87 H.	Collodion	81.490	—.020	81.470	287.430	—.001	287.429	205.959	. . .	
87 T.	Collodion	81.453	—.020	81.433	287.347	—.001	287.346	205.913	205.925	Almost impossible to measure.
48 H.	Gelatine	83.150	—.020	83.130	289.530	—.001	289.529	206.399	. . .	
48 T.	Gelatine	82.173	—.020	82.153	288.800	—.001	288.799	206.646	206.584	
88 H.	Collodion	82.720	—.020	82.700	289.810	—.001	289.809	207.109	. . .	
88 T.	Collodion	94.347	—.017	94.330	301.413	—.004	301.409	207.079	207.087	Measurements have small weights.
49 H.	Gelatine	82.800	—.020	82.780	290.370	—.001	290.369	207.589	. . .	
49 T.	Gelatine	82.763	—.020	82.743	291.100	—.002	291.098	208.355	208.164	

There is reproduced, herewith, by phototype, negative (gelatine) No. 28, exhibiting as nearly as possible the central phase of the eclipse, as seen at the Observatory. This negative readily admitted of an enlargement to a diameter of sun of 26 inches, the original diameter being 4.35 inches, and this enlarged copy, showing, besides the phase of the eclipse, the well-known soft outline of the sun's limb, well-cut cusps, and hard outline of the moon's limb, is now framed and to be seen at the Observatory. The reticule-plate was marked D. C. '82, being that used here during the Venus transit of 1882, and it was not thought necessary to change the mark.

The time of the exposure was—

Washington mean time, March 16, 1885, 1^h 18^m $28^s.81$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APPENDIX III, 1882.

ON THE

FLEXURE OF MERIDIAN INSTRUMENTS,

AND THE

MEANS AVAILABLE FOR ELIMINATING ITS EFFECTS

FROM

STAR PLACES.

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ON THE FLEXURE OF MERIDIAN INSTRUMENTS.

Many years of patient investigation have at last reduced the probable error of the best meridian observations to somewhat less than half a second of arc, but that degree of accuracy is attained only by scrupulous attention to every detail, no matter how minute. It is not easy to suggest anything likely to bring the limits of error within narrower bounds, but among the various operations concerned in meridian observations the determination of the flexure of the instrument is perhaps the most unsatisfactory, and therefore most in need of improvement. In considering it we must not forget that the flexures in right ascension and declination, or more generally, in azimuth and altitude, are but the resolved values of the total flexure, and it may be well to begin by writing out the general equations which connect these quantities.

If R is the total flexure, and θ the angle which its direction makes with the plane of the meridian, then, as both R and θ are functions of the zenith distance, ζ, we may write

$$R = \mathsf{F}(\zeta) \tag{1}$$

$$\theta = \mathsf{f}(\zeta) \tag{2}$$

whence, by putting F_α and F_δ for the flexures in right ascension and declination,

$$F_\alpha = \mathsf{F}(\zeta) \sin \mathsf{f}(\zeta) \tag{3}$$

$$F_\delta = \mathsf{F}(\zeta) \cos \mathsf{f}(\zeta) \tag{4}$$

The most convenient way of obtaining determinate forms for (3) and (4) seems to be by equating them to some arbitrary series, the coefficients of which must subsequently be determined so as to satisfy (1) and (2). Accordingly, we put

$$\mathsf{F}(\zeta) \sin \mathsf{f}(\zeta) = a_1 \sin \zeta + b_1 \cos \zeta + a_2 \sin 2\zeta + b_2 \cos 2\zeta + \&c. \tag{5}$$

$$\mathsf{F}(\zeta) \cos \mathsf{f}(\zeta) = A_1 \sin \zeta + B_1 \cos \zeta + A_2 \sin 2\zeta + B_2 \cos 2\zeta + \&c. \tag{6}$$

Upon generally accepted principles, BESSEL has shown (Astronomische Nachrichten, Dec., 1846, Bd. 25, s. 51) that when a circle is used in a vertical position the complete expression for its flexure is of the form $A \sin \zeta + B \cos \zeta$; and Sir GEORGE AIRY has stated (Month. Not. Roy. Ast. Soc. 1865, Vol. 25, p. 52), that the same form applies to "the entire effect of flexure of every kind in displacing the telescope axis or geometrical line of collimation from the intended plane of rotation." In a subsequent part of this paper an attempt is made to show how other terms may arise, but whatever their source, their appearance in (5) and (6) is amply justified by the fact

that they exist in some instruments. For example, the late Professor JAS. C. WATSON found for the meridian instrument STACKPOLE & BRO. No. 1505

$$F_a = \mp 0.390^s \cos \zeta \pm 0.070^s \sin 2\zeta$$

And the present writer found for the meridian instrument STACKPOLE & BRO. No. 1502

$$F_a = \mp 0.507^s \cos \zeta + (a^{ii} \pm 0.036^s) \sin 2\zeta$$

In both these instruments the telescope was of the broken form, with the eye-piece at one extremity of its axis.

Unless there are an infinite number of terms in the right-hand members of (5) and (6), these equations cannot in general be exactly satisfied for all values of ζ. If there are only $2n$ terms, the necessary adjustment may be effected by regarding both the right and left-hand members of (5) and (6) as the ordinates of curves whose abscissas are ζ, dividing the areas embraced between these curves and their axes of abscissas into $2n$ parts, each having a length of π/n, and then either making the area of each of the several parts of the surfaces represented by the right-hand members of the equations equal to the area of the corresponding part of the surface represented by the left-hand member, or making the middle ordinate in each of the several parts of the right-hand curves equal to the mean of the ordinates of the corresponding part of the left-hand curve.

If the latter method is adopted we must have $2n$ equations of the form

$$\frac{n}{\pi}\int_{\zeta-\frac{\pi}{2n}}^{\zeta+\frac{\pi}{2n}} \mathsf{F}(\zeta) \sin \mathsf{f}(\zeta)\, d\zeta = \sum_{n=1}^{n=n} (a_n \sin n\zeta + b_n \cos n\zeta) \tag{7}$$

corresponding to a series of $2n$ equi-distant values of ζ; and from the solution of this system of equations the values of $a_1, b_1, a_2, b_2, \ldots\ldots a_n, b_n$ will result in terms of $\mathsf{F}(\zeta)$ and $\mathsf{f}(\zeta)$.

Similarly, $2n$ equations of the form

$$\frac{n}{\pi}\int_{\zeta-\frac{\pi}{2n}}^{\zeta+\frac{\pi}{2n}} \mathsf{F}(\zeta) \cos \mathsf{f}(\zeta)\, d\zeta = \sum_{n=1}^{n=n} (A_n \sin n\zeta + B_n \cos n\zeta) \tag{8}$$

suffice to determine the coefficients $A_1, B_1, A_2, B_2 \ldots\ldots A_n, B_n$.

As the series constituting the right-hand member of each of the equations (5) (6), (7), and (8) will be largely used in this paper, it is convenient to state once for all the maximum number of coefficients it may have, and the notation adopted to distinguish them. For reasons cited on pages 8 and 14, we cannot assume the flexure to be symmetrically distributed in each of the four quadrants. The series in question should therefore have the utmost generality compatible with continuous variation throughout the entire circle, and that will be attained by making each coefficient subject to change whenever the circular function by which it is multiplied passes through zero. A_n may then change its value whenever $n\zeta$ is an exact multiple of π, B_n may

change its value whenever $(n\zeta + \frac{1}{2}\pi)$ is an exact multiple of π, and as the limiting value of ζ is 2π, both A_n and B_n may have a maximum of $2n$ different values. The total number of different values of all the coefficients in the series may therefore amount to $2n(n + 1)$, and the necessity for some systematic notation of them is obvious. The plan adopted is uniformly to designate the coefficient of a sine term by the letter A, and the coefficient of a cosine term by the letter B; small letters being used when dealing with flexure in right ascension, and capitals when dealing with flexure in declination; and to append to each letter a suffix of two or more figures, the first indicating the place of the term in the series, and the others showing which of the several possible values of that term is intended. For example, A_{23} would be the third value of the coefficient of the second sine term in a series relating to flexure in declination—that is, it would be the coefficient of sin 2ζ when ζ is between 180° and 270°. In general formulæ for flexure throughout a whole quadrant, there are necessarily two or more values of the coefficients of all terms involving arc multiples greater than 2ζ, and such values will be indicated by writing the suffixes in their proper order, from above downwards. For example, $b^{59}_{510}{}_{51}$ would be the ninth, tenth, and first values of the coefficient of the fifth cosine term in a series relating to flexure in right ascension—that is, it would be the three coefficients of cos 5ζ which apply respectively when ζ is between 270° and 306°, 306° and 342°, and 342° and 18°.

In practice F_α and F_δ can usually be found more readily than $\mathsf{F}(\zeta)$ and $\mathsf{f}(\zeta)$, and for that reason the chief value of (7) and (8) consists in the light they shed upon the general theory. As F_α and F_δ are entirely independent of each other and require very different treatment, it will be convenient to investigate them separately, under the heads of Flexure of Transit Instruments, and Flexure of Vertical Circles; but of course it will be understood that the general theory of flexure in azimuth is comprehended under the former of these heads, and the general theory of flexure in altitude under the latter; because the flexure in the particular vertical circle known as the meridian does not differ from that in any other vertical circle whatsoever.

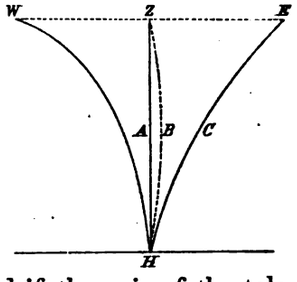
FLEXURE OF TRANSIT INSTRUMENTS.

Transit instruments divide themselves into two classes according as their telescopes are straight or bent, and it is in the latter form that the effects of flexure are by far the greatest. Even when pointing to the horizon the flexure of the axis of a bent telescope tends to rotate its prism and displace its line of collimation, while at the zenith this tendency is largely enhanced. In a straight telescope it cannot safely be affirmed that such displacements are entirely absent, but if present they are certainly quite small. Whatever the form of the instrument, if its line of collimation is determined with the telescope in a horizontal position, the reversal of the latter necessarily reverses the action of gravity upon all its particles, and there is no proof that the yielding of the particles is identical in the two positions. Be that as it may, if gravity produces any horizontal displacement whatever in the line of collimation, the latter will in general change its position when the telescope is reversed, and the angle which it makes with the axis of the instrument must necessarily differ from ninety degrees

by half that change. Such a difference is extremely difficult to detect, and fortunately the attempt is unnecessary, because *for the zenith distance at which it was determined* the line of collimation possesses the essential properties of a line perpendicular to the axis in so far that its direction is unaffected by reversing the telescope, and if it coincides with the meridian on one side of the zenith, it will also coincide with it at the same altitude on the other side of the zenith, provided no error of level exists. The sole condition capable of insuring the rigorous perpendicularity of the line of collimation to the axis is that the reversal of the telescope shall not affect the action of gravity upon any of its parts. This condition is fulfilled only when the telescope is pointed either to the zenith or to the nadir. In the former position a vertical collimator may be used, and in the latter a collimating eye-piece and a basin of mercury.

Whenever measurable flexure exists, if the line of collimation is determined simultaneously upon a horizontal collimator and upon a vertical one, the difference of the two results will show that the collimation is a function of the zenith distance. Let the micrometer reading defining the position of the line of collimation in the field of view be M_H when the telescope is horizontal, and M_V when it is vertical. Also, let the line ZAH, Fig. 1, be the projection of the plane of the meridian upon the plane of the prime vertical, Z being the zenith and H the horizon; and suppose the line of collimation of a transit instrument to be determined in the horizontal position, and then to be directed upon the meridian at H. The telescope being gradually elevated from the horizon to the zenith, let the projection of the path traced by the point M_H be HW when the clamp is west, and HE when it is east. At every altitude the projection of the path of the instantaneous line of collimation will lie half-way between these curves; and if the axis of the telescope is horizontal, their upper extremities will be equidistant from Z, because the line of collimation then passes through the zenith. It is therefore clear that the surface generated by the line of collimation cannot coincide with the meridian unless the curves HW and HE are symmetrical with respect to that plane. Very slight differences in the elasticity of the instrument in different directions suffice to render the fulfillment of this condition impossible, and in general its existence cannot be assumed. Accordingly, in the figure the curves are represented as unsymmetrical, and the space between them is bisected by the dotted curve ZBH, which is the projection of the path traced by the line of collimation. The correction for flexure may therefore be regarded as made up of two parts; one being the distance from the curve HW, or HE, to the curve HBZ, and the other the distance from the curve HBZ to the straight line HAZ This may be expressed symbolically by the equation

Fig. 1.



$$F_a = \varphi(\zeta) + \psi(\zeta) \qquad (9)$$

in which F_a is the correction for flexure to the line of collimation when the zenith distance of the latter is ζ, and $\varphi(\zeta)$ and $\psi(\zeta)$ are two undetermined functions of the zenith distance, the generality of which will not be impaired if both are assumed to be of the form

$$a_1 \sin \zeta + b_1 \cos \zeta + a_2 \sin 2\zeta + b_2 \cos 2\zeta + \&c. \qquad (10)$$

With respect to $\varphi(\zeta)$, it should be remarked that in Fig. 1 the collimation at the horizon has been taken as the standard, but that at the zenith might have been adopted with equal propriety, and the choice determines whether the flexure is to be regarded as increasing from the horizon to the zenith, or from the zenith to the horizon. In the former case it can be dealt with as an error of level, and in the latter as an error of azimuth. Whatever the choice may be, F_a is zero at the starting point, and the sum of all the terms in (10) must vanish there. This does not necessarily imply that each individual term becomes zero, but on account of the peculiar conditions involved we may assume such to be the case, and then from the series of pairs of terms in (10) one term in each pair must vanish. In the reduction of time observations by the method of least squares, it is convenient to make the correction for flexure depend upon the cosine of the zenith distance, so that if consisting of a single term it may be combined with the correction for level. Using this circumstance to determine which terms shall vanish, we have

$$\varphi(\zeta) = \pm b_{1.1} \cos \zeta \pm a_{2.1} \sin 2\zeta \pm b^{3.1}_{3.2} \cos 3\zeta \pm \&c. \tag{11}$$

where the upper signs must be taken when the clamp is west, and the lower when it is east.

As $\psi(\zeta)$ is zero both at the zenith and at the horizon, for it there must vanish in (10) not only all terms which vanish for $\varphi(\zeta)$, but also the sum of all terms involving odd multiples of the zenith distance. Accordingly we may put

$$\psi(\zeta) = a^{ii.1} \sin 2\zeta + a^{iv.1}_{iv.2} \sin 4\zeta + a^{vi.1}_{vi.2\,vi.3} \sin 6\zeta + \&c \tag{12}$$

And then, from (9), (11), and (12)

$$\begin{aligned} F_a = \pm b_{1.1} \cos \zeta &+ (a^{ii.1} \pm a_{2.1}) \sin 2\zeta \pm b^{3.1}_{3.2} \cos 3\zeta \\ &+ (a^{iv.1}_{iv.2} \pm a^{4.1}_{4.2}) \sin 4\zeta \pm b^{5.1}_{5.2\,5.3} \cos 5\zeta + \&c. \end{aligned} \tag{13}$$

By deducing formula (13) in a somewhat different way, the meaning of its coefficients will become clearer. The clamp being west, let the flexure correction be given for all points between the zenith and southern horizon by the expression

$$F_1 = a_{11} \sin \zeta + b_{11} \cos \zeta + a_{21} \sin 2\zeta + b^{21}_{22} \cos 2\zeta + \&c. \tag{14}$$

and for all points between the northern horizon and zenith by the expression

$$F_4 = a_{12} \sin \zeta + b_{11} \cos \zeta + a_{24} \sin 2\zeta + b^{24}_{21} \cos 2\zeta + \&c. \tag{15}$$

the only coefficient common to both being b_{11}. When the collimation is adjusted to zero at the horizon, (14) and (15) become

$$F_1 = b_{11} \cos \zeta + a_{21} \sin 2\zeta + b^{31}_{32} \cos 3\zeta + a^{41}_{42} \sin 4\zeta + b^{51}_{52\,53} \cos 5\zeta + \&c. \tag{16}$$

$$F_4 = b_{11} \cos \zeta + a_{24} \sin 2\zeta + b^{36}_{31} \cos 3\zeta + a^{47}_{48} \sin 4\zeta + b^{59}_{510\,51} \cos 5\zeta + \&c. \tag{17}$$

But, from Fig. 1,

$$F_a = \pm \tfrac{1}{2}(F_1 + F_4) + \tfrac{1}{2}(F_1 - F_4) = \pm \varphi(\zeta) + \psi(\zeta) \tag{18}$$

whence, by substituting the values of F_1 and F_4 from (16) and (17), and comparing the result with (11) and (12),

$$\begin{aligned}
b_{1.1} &= b_{11} & a_{2.1} &= \tfrac{1}{2}(a_{21} - a_{24}) \\
b_{3.1} &= b_{31} & a_{4.1} &= \tfrac{1}{2}(a_{41} - a_{48}) \\
b_{3.2} &= \tfrac{1}{2}(b_{32} + b_{36}) & a_{4.2} &= \tfrac{1}{2}(a_{42} - a_{47}) \\
b_{5.1} &= b_{51} & a^{\text{ii}.1} &= \tfrac{1}{2}(a_{21} + a_{24}) - \tfrac{1}{3}(b_{32} - b_{36}) \\
b_{5.2} &= \tfrac{1}{2}(b_{52} + b_{510}) & a^{\text{iv}.1} &= \tfrac{1}{2}(a_{41} + a_{48}) - \tfrac{1}{5}(1 + \sqrt{\tfrac{1}{2}})\,(b_{52} - b_{510}) \\
b_{5.3} &= \tfrac{1}{2}(b_{53} + b_{59}) & a^{\text{iv}.2} &= \tfrac{1}{2}(a_{42} + a_{47}) + \tfrac{1}{5}(1 - \sqrt{\tfrac{1}{2}})\,(b_{52} - b_{510}) - \tfrac{2}{5}(b_{53} - b_{59})
\end{aligned} \tag{19}$$

The mode of evaluing the coefficients a^{ii}, a^{iv}, etc., can be most conveniently explained by an example, for which we may take $a^{\text{iv}.2}$. To the term $a^{\text{iv}.2} \sin 4\zeta$ in (12), there corresponds $\tfrac{1}{2}(a_{42} - a_{47}) \sin 4\zeta + \tfrac{1}{2}(b_{53}^{52} - b_{59}^{510}) \cos 5\zeta$ in $\tfrac{1}{2}(F_1 - F_4)$, and it is required that these two expressions shall be as nearly as possible equal for all values of ζ. The best approximation to that condition seems to be attained by putting

$$a^{\text{iv}.2} \int_{45^\circ}^{90^\circ} \sin 4\zeta \,.\, d\zeta = \tfrac{1}{2}(a_{42} - a_{47}) \int_{45^\circ}^{90^\circ} \sin 4\zeta \,.\, d\zeta + \tfrac{1}{2}(b_{52} - b_{510}) \int_{45^\circ}^{54^\circ} \cos 5\zeta \,.\, d\zeta$$
$$+ \tfrac{1}{2}(b_{53} - b_{59}) \int_{54^\circ}^{90^\circ} \cos 5\zeta \,.\, d\zeta$$

and then the result given in (19) follows at once.

As the quantities a_{24}, a_{47}, a_{48}, etc., will usually be essentially negative, it is evident that the coefficients in (11) are the sums, and the coefficients in (12) the differences, of the corresponding coefficients in (16) and (17).

Formula (13) is perfectly general, but there is no proof that the flexure is the same when the telescope is pointed to the zenith as when pointed to the nadir, and it cannot be assumed that any of the coefficients have the same value in the two semicircles which are respectively above and below the horizon. Different sets of coefficients are therefore required for direct and reflection observations; but as the only difference in the procedure for their determination is that in one case the necessary data are observed directly, and in the other by reflection, one description will suffice for both. The numerical values of the coefficients in (11) can readily be determined from observations upon a pair of collimators; but that process fails completely for the coefficients in (12), and the only available way of estimating them seems to be by star transits, reduced upon the assumption that the star places are rigorously accurate. As in practice the first two terms of (13) will usually suffice, we may neglect the remaining terms, and confine ourselves to the consideration of the formulæ for determining b_1, a_2, and a^{ii}.

Let the collimation be determined simultaneously upon a horizontal collimator and upon a vertical one, the micrometer reading defining the position of the line of collimation in the field of view of the transit telescope being M_H in the former case, and M_V in the latter; and let

$$M_H - M_V = K_1 \tag{20}$$

For the sake of generality, it is desirable to suppose the existence of a pivot inequality such that the difference of radii of the pivots is p. This will not affect M_H, but M_V will be too great by p, and the real change produced in the position of the line of collimation by elevating the telescope from the horizon to the zenith will be $K_1 + p$. By equating this to (13), and remembering that the corresponding value of ζ is zero, we get

$$b_1 = K_1 + p \tag{21}$$

Next, let the horizontal collimator be tilted up to an angle of forty-five degrees, and then let the collimation be determined simultaneously upon it and upon the vertical collimator. Designate the micrometer reading which defines the position of the line of collimation when the telescope is so elevated by M_{45}, and put

$$M_{45} - M_V = K_2 \tag{22}$$

Then (20) minus (22) gives

$$M_H - M_{45} = K_1 - K_2$$

The correction to be applied to this result on account of inequality of pivots is $+ p \cos 45°$; after which by (13) and (21)

$$K_1 - K_2 + p \cos 45° = (K_1 + p) \cos 45° + a_2$$

Whence

$$a_2 = K_1 (1 - \cos 45°) - K_2 = 0.293\, K_1 - K_2 \tag{23}$$

The only possible way of determining a^{ii} seems to be by observing the transits of a sufficient number of stars so selected as to constitute two groups, each tolerably uniformly distributed along the meridian from the northern to the southern horizon. Both groups must be observed on the same evening, one with clamp west, the other with clamp east, and the number of stars which can be included in them is limited by the circumstance that, to diminish the risk of changes in the instrumental constants, the interval from the begining of the first group to the end of the second should not exceed two hours. Each transit will furnish an observation equation of the usual form, except that the absolute term must be corrected for the first two terms in (11), and the term $+ a^{ii} \sin 2\zeta$ must be added. From these observation equations the value of a^{ii} can be found by the method of least squares, and four or five night's work will probably suffice to give a trustworthy result if the star places are good. For an instrument doing fundamental work the most satisfactory course will probably be to neglect $\psi(\zeta)$ in the preliminary reductions, and to obtain its coefficients by the method of least squares from the residuals found by comparing all the stars observed with as many catalogues as possible.

When the flexure can be expressed by a single term, it may conveniently be combined with the correction for level, by adding b_1 to the level constant; but if more than one term is necessary it had better be put in the form of a correction to the collimation. Accordingly, let c' be the collimation constant for ζ equal ninety degrees, with clamp west; and let c be the same constant for any other zenith distance, with clamp either east or west. Then, by putting $c \mp c' = F_c$, formula (13) gives

$$c = \pm c' \pm b_1 \cos \zeta + (a^{ii} \pm a_2) \sin 2\zeta \pm \&c. \tag{24}$$

in which the upper signs must be taken for clamp west, the lower for clamp east, and regard must be had to the quadrant in which ζ is situated.

In some of the very best fundamental star catalogues the adopted position of each star is the mean of the four results obtained by observing it both directly and by reflection, with the clamp of the instrument both west and east. To determine the effect of this mode of procedure, let ζ be counted from the zenith toward the south, and in accordance with the principles already laid down, let the correction for flexure in right ascension, when the clamp is west, be given for the several quadrants by the expressions

$$F_1 = b_{11} \cos \zeta + a_{21} \sin 2\zeta + b^{31}_{32} \cos 3\zeta + a^{41}_{42} \sin 4\zeta + b^{51}_{52\,53} \cos 5\zeta + \&c. \tag{25}$$

$$F_2 = b_{12} \cos \zeta + a_{22} \sin 2\zeta + b^{33}_{34} \cos 3\zeta + a^{43}_{44} \sin 4\zeta + b^{54}_{55\,56} \cos 5\zeta + \&c. \tag{26}$$

$$F_3 = b_{12} \cos \zeta + a_{23} \sin 2\zeta + b^{34}_{35} \cos 3\zeta + a^{45}_{46} \sin 4\zeta + b^{56}_{57\,58} \cos 5\zeta + \&c. \tag{27}$$

$$F_4 = b_{11} \cos \zeta + a_{24} \sin 2\zeta + b^{36}_{31} \cos 3\zeta + a^{47}_{48} \sin 4\zeta + b^{59}_{510\,51} \cos 5\zeta + \&c. \tag{28}$$

The correction to the mean of the direct observations made respectively with clamp west and east will then be

$$\begin{aligned} \tfrac{1}{2}(F_1 - F_4) = &+ \tfrac{1}{2}(a_{21} + a_{24}) \sin 2\zeta + \tfrac{1}{2}(b^{31}_{32} - b^{31}_{36}) \cos 3\zeta \\ &+ \tfrac{1}{2}(a^{41}_{42} + a^{48}_{47}) \sin 4\zeta + \tfrac{1}{2}\left(b^{51}_{52\,53} - b^{51}_{510\,59}\right) \cos 5\zeta \\ &+ \&c. \end{aligned} \tag{29}$$

If ζ is counted from the reflected zenith, the correction to the mean of the reflection observations will be

$$\begin{aligned} \tfrac{1}{2}(F_2 - F_3) = &+ \tfrac{1}{2}(a_{22} + a_{23}) \sin 2\zeta - \tfrac{1}{2}(b^{34}_{33} - b^{34}_{35}) \cos 3\zeta \\ &+ \tfrac{1}{2}(a^{44}_{43} + a^{45}_{46}) \sin 4\zeta - \tfrac{1}{2}\left(b^{56}_{55\,54} - b^{56}_{57\,58}\right) \cos 5\zeta \\ &+ \&c. \end{aligned} \tag{30}$$

And the correction required by the mean of all four observations will be

$$\begin{aligned} \tfrac{1}{4}(F_1 + F_2 - F_3 - F_4) = &+ \tfrac{1}{4}(a_{21} + a_{22} + a_{23} + a_{24}) \sin 2\zeta \\ &+ \tfrac{1}{4}(b^{31}_{32} - b^{34}_{33} + b^{34}_{35} - b^{31}_{36}) \cos 3\zeta \\ &+ \tfrac{1}{4}(a^{41}_{42} + a^{44}_{43} + a^{45}_{46} + a^{48}_{47}) \sin 4\zeta \\ &+ \tfrac{1}{4}\left(b^{51}_{52\,53} - b^{56}_{55\,54} + b^{56}_{57\,58} - b^{51}_{510\,59}\right) \cos 5\zeta \\ &+ \&c. \end{aligned} \tag{31}$$

The error arising from the neglect of (31) is evidently of the same order as that produced by the omission of the terms whose coefficients are a^{ii}, a^{iv}, etc., in (13); but nevertheless, the correction of each observed transit by (13) will surely lead to more accurate right ascensions than can be got by simply taking the mean of the four right ascensions obtained directly and by reflexion with the clamp successively west and east. In the former case the observed time of transit of each individual star is freed as far as possible from errors of flexure before the clock and instrumental constants

are computed, and therefore the resulting right ascensions should be affected only by those terms whose coefficients are a^{ii}, a^{iv}, etc.; while in the latter case nothing whatever is done to eliminate errors of flexure from the adopted azimuths and clock corrections, and the definitive position obtained from the mean of the four observed right ascensions is necessarily vitiated, not only by the terms dealt with in (31), but also by other functions of the flexure of unknown magnitude. For that reason the latter method of procedure cannot be regarded as satisfactory.

The results of this discussion respecting flexure in right ascension may be summed up as follows:

1. Except when the telescope is vertical, the line of collimation is not in general perpendicular to the axis.

2. For the zenith distance at which it was determined, the line of collimation possesses the essential properties of a line perpendicular to the axis.

3. The flexure consists of two parts, the larger of which is measurable by means of a pair of collimators, but the smaller can be determined only from star transits.

4. The correction for flexure can be thrown upon either the azimuth, the level, or the collimation, as may suit the convenience of the computer.

5. When the flexure can be expressed by a single term, it is generally most convenient to throw the correction for it upon the level. The corresponding collimation constant will then belong to the horizontal position of the telescope.

6. When the expression for flexure consists of two or more terms, it is best to throw the correction for it upon the collimation. The constant part of the latter will then be its value for the horizontal position of the telescope.

7. The effect of flexure cannot be satisfactorily eliminated from the right ascension of a star by simply taking the mean of the four results obtained by observing it both directly and by reflection with the clamp of the instrument both west and east.

FLEXURE OF VERTICAL CIRCLES.

If a vertical circle were a perfectly rigid body, the line of collimation of its telescope would maintain an invariable position relatively to the zero of graduation of its circles, and the motions of the latter would be exactly the same as those of the former. Unfortunately, instead of being rigid, all the parts of such an instrument yield to the action of gravity, and as this yielding is a function of the position of the telescope, it gives rise to systematic variations in the relation of the line of collimation to the zero of the circles, and therefore the motions of the latter are not identical with those of the former. The readings of the imaginary rigid instrument are undisturbed by gravity, while those of the real instrument are disturbed by it, and the problem we have to consider is how to pass from the disturbed to the undisturbed readings.

Let θ be the disturbed, and η the corresponding undisturbed reading, both being supposed to increase in the direction from the zenith toward the southern horizon. Then, in the absence of all knowledge respecting the form of the function connecting η and θ, we will put

$$\eta = \theta + F(\zeta) \tag{32}$$

It is customary to simplify matters by using the same coefficients in $F(\zeta)$ for all zenith distances up to 360°, but such a procedure is manifestly inadmissible unless it can be shown that the strains are always borne by the same parts, and that the modulus of elasticity of *the instrument considered as a whole* is constant within the limits of stress to which these parts are subjected. In a perfectly homogeneous substance the modulus should be constant up to the elastic limit, but experience with testing machines proves that this is not always the case in metals as we know them. On the contrary, it is common enough to find the modulus varying considerably with the strain. Doubtless this is due to imperfections in the material, perhaps so minute as to be almost invisible, but far greater imperfections must surely exist in a telescope tube, and in the joints at its union with the axis, objective, micrometer, and circles. By the action of gravity the under sides of all these parts are compressed and the upper sides extended, and the compressions and extensions are interchanged whenever the telescope is rotated through the vertical plane, thus producing changes of stress, some of which are very considerable. As typical of another phase of these changes, consider what occurs at the junction of the telescope tube with its axis. The parts in question are usually of brass, accurately fitted to each other, and held together by steel screws. On the under side of the tube the brass only is compressed, without any strain whatever being thrown upon the screws, while on the upper side both the brass and the screws are extended. Thus it happens that the screws are divided into two groups, one of which is brought into action when one side of the tube is uppermost, and the other when the other side is uppermost, but both groups are never in action at the same time. Perfect symmetry in the joints may do something to remedy the injurious effect of this unfortunate distribution of strains, but it is evident that the working parts of the instrument are not strictly the same in all positions of the telescope, and that circumstance is likely to influence the flexure because serious angular displacements of the line of collimation may result from comparatively slight changes in the absolute magnitude of the bending of the parts. We therefore conclude that if, as the telescope revolves, changes in the coefficients which enter $F(\zeta)$ are not absolutely certain, they are at least so probable that it is imprudent to assume their absence. To take account of them the following expressions will be adopted for passing from the disturbed to the undisturbed circle readings when the clamp is west, namely:

Between the zenith and southern horizon

$$\eta = \theta + F_1(\zeta) \tag{33}$$

Between the southern horizon and nadir

$$\eta = \theta + F_2(\zeta) \tag{34}$$

Between the nadir and northern horizon

$$\eta = \theta + F_3(\zeta) \tag{35}$$

Between the northern horizon and zenith

$$\eta = \theta + F_4(\zeta) \tag{36}$$

in which η, θ, and ζ are to be counted through the whole circle, up to 360°.

It is convenient to apply systematic corrections to the final declinations rather than to the original circle readings from which these declinations result, and equations (33) to (36) require certain transformations to fit them for use in that way. If N is the circle reading when the telescope is pointed to the nadir, the corrected nadir reading may be written $N + F_0(\zeta)$, and then the corrected reading for the zenith point will be $N + F_0(\zeta) - 180°$. By subtracting this from η, and bearing in mind that the reversal of the instrument also reverses the direction in which that quantity increases we get

$$\zeta = 180° \pm \eta \mp N \mp F_0(\zeta) \tag{37}$$

the upper signs applying when the clamp is west and the lower when it is east.

Again; if φ is the assumed latitude, $\varphi + \delta\varphi$ the true latitude, and δ_0 the true declination, we have for a star observed directly, if at its upper culmination,

$$\zeta = \varphi + \delta\varphi - \delta_0 \tag{38}$$

and if at its lower culmination,

$$\zeta = 180° + \varphi + \delta\varphi + \delta_0 \tag{39}$$

but for a star observed by reflection, if at its upper culmination,

$$\zeta = 180° - \varphi - \delta\varphi + \delta_0 \tag{40}$$

and if at its lower culmination,

$$\zeta = -\varphi - \delta\varphi - \delta_0 \tag{41}$$

By equating (37) successively to (38), (39), (40), and (41) we get
For a star observed directly at its upper culmination

$$\delta_0 = \varphi + \delta\varphi \mp \eta - 180° \pm N \pm F_0(\zeta) \tag{42}$$

For a star observed directly at its lower culmination

$$\delta_0 = -\varphi - \delta\varphi \pm \eta \mp N \mp F_0(\zeta) \tag{43}$$

For a star observed by reflection at its upper culmination

$$\delta_0 = \varphi + \delta\varphi \pm \eta \mp N \mp F_0(\zeta) \tag{44}$$

And for a star observed by reflection at its lower culmination

$$\delta_0 = -\varphi - \delta\varphi \mp \eta - 180° \pm N \pm F_0(\zeta) \tag{45}$$

To eliminate η, its value from equations (33) to (36) must be substituted in equations (42) to (45), and the results are

For Clamp West,

Between the zenith and southern horizon

$$\delta_0 = (+\varphi - \theta + N - 180°)_1 + \delta\varphi + F_0(\zeta) - F_1(\zeta) \tag{46}$$

Between the southern horizon and nadir

$$\delta_0 = (+\varphi + \theta - N \ldots\ldots)_2 + \delta\varphi - F_0(\zeta) + F_2(\zeta) \tag{47}$$

Between the nadir and reflected pole

$$\delta_0 = (+\varphi + \theta - N \ldots\ldots)_3 + \delta\varphi - F_0(\zeta) + F_3(\zeta) \tag{48}$$

Between the reflected pole and northern horizon

$$\delta_0 = (-\varphi - \theta + N - 180^\circ)_4 - \delta\varphi + F_0(\zeta) - F_3(\zeta) \tag{49}$$

Between the northern horizon and true pole

$$\delta_0 = (-\varphi + \theta - N \ldots\ldots)_5 - \delta\varphi - F_0(\zeta) + F_4(\zeta) \tag{50}$$

Between the true pole and zenith

$$\delta_0 = (+\varphi - \theta + N - 180^\circ)_6 + \delta\varphi + F_0(\zeta) - F_4(\zeta) \tag{51}$$

When the instrument is reversed to clamp east η, θ, and $F(\zeta)$ will increase from the zenith toward the northern horizon, and if ζ is still counted from the zenith toward the south, equation (36) will take the place of (33), (35) the place of (34), (34) the place of (35), and (33) the place of (36). Hence, by the substitution of the values of η from equations (36) to (33) in equations (42) to (45), we find

For Clamp East,

Between the zenith and southern horizon

$$\delta_0 = (+\varphi + \theta - N - 180^\circ)_1 + \delta\varphi - F_0(\zeta) + F_4(\zeta) \tag{52}$$

Between the southern horizon and nadir

$$\delta_0 = (+\varphi - \theta + N \ldots\ldots)_2 + \delta\varphi + F_0(\zeta) - F_3(\zeta) \tag{53}$$

Between the nadir and reflected pole

$$\delta_0 = (+\varphi - \theta + N \ldots\ldots)_3 + \delta\varphi + F_0(\zeta) - F_2(\zeta) \tag{54}$$

Between the reflected pole and northern horizon

$$\delta_0 = (-\varphi + \theta - N - 180^\circ)_4 - \delta\varphi - F_0(\zeta) + F_2(\zeta) \tag{55}$$

Between the northern horizon and true pole

$$\delta_0 = (-\varphi - \theta + N \ldots\ldots)_5 - \delta\varphi + F_0(\zeta) - F_1(\zeta) \tag{56}$$

Between the true pole and zenith

$$\delta_0 = (+\varphi + \theta - N - 180^\circ)_6 + \delta\varphi - F_0(\zeta) + F_1(\zeta) \tag{57}$$

In equations (46) to (57) the quantities within the parentheses are the observed declinations, which, for brevity, will hereafter be designated by the symbol δ. The subscript numbers indicate the character of the observation from which the declination was derived, as in the following scheme:

	At Upper Culmination.	At Lower Culmination.
Southern star observed directly	δ_1	.
Southern star observed by reflection	δ_2	.
Northern star observed by reflection	δ_3	δ_4
Northern star observed directly	δ_6	δ_5

The position of the instrument, whether clamp west or clamp east, will be indicated by a subscript *w* or *e* preceding the δ; for example, ${}_w\delta_4$ would be the declination

of a northern star, obtained by observing it by reflection, at its lower culmination, with clamp west.

Observations of pairs of stars, whose components culminate about the same time, at nearly equal distances north and south of the zenith, are of great value in determining the coefficients of cosine flexure of non-reversible transit circles. For such observations

$$\zeta_s + \delta\zeta_s = -\zeta_n \tag{58}$$

in which the subscripts s and n indicate the quantities belonging respectively to the southern and northern stars, and $\delta\zeta$ is the difference of zenith distance of the two stars. The latter quantity can be found with the utmost exactness by means of a zenith telescope. Upon substituting the values of ζ from (38) and (39) in (58), that equation gives

$$2(\varphi + \delta\varphi) + \delta\zeta_s = {}_s\delta_0 + {}_n\delta_0 \tag{59}$$

if both stars are at their upper culminations, or

$$2(\varphi + \delta\varphi) + \delta\zeta_s = {}_s\delta_0 + (180^\circ - {}_n\delta_0) \tag{60}$$

if the northern star is at its lower culmination.

Data of the highest value in determining the coefficients of flexure of a vertical circle can be obtained by making readings with it upon a pair of collimators pointed at each other. If ζ_s and ζ_n are respectively the true zenith distance of the southern and northern collimator, then

$$\zeta_s + 180^\circ = \zeta_n \tag{61}$$

or, if the declinations of the collimators are employed instead of their zenith distances

$$0 = {}_s\delta_0 + {}_n\delta_0 \tag{62}$$

The above are all the formulæ necessary in writing out the observation equations for the determination of $\delta\varphi$ and the coefficients in the flexure function. If the observed declinations are corrected for everything except flexure and error in the assumed latitude, these equations will be as follows:

Observation Equations.

For a star south of the zenith, observed both directly and by reflection; with clamp west (46) and (47) give

$$0 = \delta_1 - \delta_2 + 2F_0(\zeta) - F_1(\zeta_1) - F_2(\zeta_2) \tag{63}$$

and with clamp east (52) and (53) give

$$0 = \delta_1 - \delta_2 - 2F_0(\zeta) + F_3(\zeta_2) + F_4(\zeta_1) \tag{64}$$

For a star north of the zenith, observed at its upper culmination, both directly and by reflection; with clamp west (51) and (48) give

$$0 = \delta_0 - \delta_3 + 2F_0(\zeta) - F_3(\zeta_3) - F_4(\zeta_6) \tag{65}$$

and with clamp east (57) and (54) give

$$0 = \delta_6 - \delta_3 - 2F_0(\zeta) + F_1(\zeta_6) + F_2(\zeta_3) \tag{66}$$

For a star north of the zenith, observed at its lower culmination, both directly and by reflection; with clamp west (50) and (49) give

$$0 = \delta_5 - \delta_4 - 2F_0(\zeta) + F_3(\zeta_4) + F_4(\zeta_5) \tag{67}$$

and with clamp east (56) and (55) give

$$0 = \delta_5 - \delta_4 + 2F_0(\zeta) - F_1(\zeta_5) - F_2(\zeta_4) \tag{68}$$

For a star north of the zenith, observed directly both at its upper and lower culminations; with clamp west (51) and (50) give

$$0 = \delta_6 - \delta_5 + 2\delta\varphi + 2F_0(\zeta) - F_4(\zeta_6) - F_4(\zeta_5) \tag{69}$$

and with clamp east (57) and (56) give

$$0 = \delta_6 - \delta_5 + 2\delta\varphi - 2F_0(\zeta) + F_1(\zeta_6) + F_1(\zeta_5) \tag{70}$$

For a pair of stars observed directly, one north the other south of the zenith, both being at their upper culmination; with clamp west (46) and (51), combined with (59), give

$$0 = \delta_1 + \delta_6 - 2\varphi - \delta\zeta_s + 2F_0(\zeta) - F_1(\zeta_1) - F_4(\zeta_6) \tag{71}$$

and with clamp east (52) and (57), combined with (59), give

$$0 = \delta_1 + \delta_6 - 2\varphi - \delta\zeta_s - 2F_0(\zeta) + F_1(\zeta_6) + F_4(\zeta_1) \tag{72}$$

For a pair of stars observed directly, one north, the other south of the zenith, the former being at its lower culmination; with clamp west (46) and (50), combined with (60), give

$$0 = \delta_1 - \delta_5 - 2\varphi - \delta\zeta_s + 180^\circ + 2F_0(\zeta) - F_1(\zeta_1) - F_4(\zeta_5) \tag{73}$$

and with clamp east (52) and (56), combined with (60), give

$$0 = \delta_1 - \delta_5 - 2\varphi - \delta\zeta_s + 180^\circ - 2F_0(\zeta) + F_1(\zeta_5) + F_4(\zeta_1) \tag{74}$$

For an observation of a pair of collimators, leveled and pointed on each other; with clamp west (46) and (50), combined with (62), give

$$0 = 180^\circ + \theta_s - \theta_n + F_1(\zeta_s) - F_4(\zeta_n) \tag{75}$$

and with clamp east (52) and (56), combined with (62), give

$$0 = 180^\circ - \theta_s + \theta_n + F_1(\zeta_n) - F_4(\zeta_s) \tag{76}$$

Similarly, for an observation of the nadir point and of a vertical collimator adjusted over a basin of mercury, it is easily seen that with clamp either west or east

$$0 = 180^\circ + \theta_z - \theta_0 + F_1(\zeta_z) - F_0(\zeta) \tag{77}$$

in which θ_z and θ_0 are respectively the circle readings at the zenith and nadir points.

For a star south of the zenith, observed directly, both with clamp west and clamp east, (46) and (52) give

$$0 = {}_w\delta_1 - {}_e\delta_1 + 2F_0(\zeta) - F_1(\zeta_w) - F_4(\zeta_e) \tag{78}$$

and for the same star observed by reflection, (47) and (53) give

$$0 = {}_w\delta_2 - {}_e\delta_2 - 2F_0(\zeta) + F_2(\zeta_w) + F_3(\zeta_e) \tag{79}$$

For a star north of the zenith, observed directly at its upper culmination, both with clamp west and clamp east, (51) and (57) give

$$0 = {}_w\delta_6 - {}_e\delta_6 + 2F_0(\zeta) - F_1(\zeta_e) - F_4(\zeta_w) \tag{80}$$

and for the same star observed by reflection, (48) and (54) give

$$0 = {}_w\delta_3 - {}_e\delta_3 - 2F_0(\zeta) + F_2(\zeta_e) + F_3(\zeta_w) \tag{81}$$

For a star north of the zenith, observed directly at its lower culmination, both with clamp west and clamp east, (50) and (56) give

$$0 = {}_w\delta_5 - {}_e\delta_5 - 2F_0(\zeta) + F_1(\zeta_e) + F_4(\zeta_w) \tag{82}$$

and for the same star observed by reflection, (49) and (55) give

$$0 = {}_w\delta_4 - {}_e\delta_4 + 2F_0(\zeta) - F_2(\zeta_e) - F_3(\zeta_w) \tag{83}$$

The next step is to determine the form of the flexure function, and here we are met by the difficulty that it doubtless varies with the construction of the instrument, and perhaps also with peculiarities in the metal too slight to make themselves manifest otherwise. We are therefore forced to fall back upon the series constituting the right-hand member of equation (8), and our discussion will be limited to the first two terms of that expression, partly because the remaining terms are probably very small in well-constructed instruments, and partly to avoid the difficulties which arise when more than five unknown quantities are included in the observation equations. We therefore put

$$F_1(\zeta) = A_1 \sin \zeta + B_1 \cos \zeta \tag{84}$$
$$F_2(\zeta) = A_1 \sin \zeta + B_2 \cos \zeta \tag{85}$$
$$F_3(\zeta) = A_2 \sin \zeta + B_2 \cos \zeta \tag{86}$$
$$F_4(\zeta) = A_2 \sin \zeta + B_1 \cos \zeta \tag{87}$$

The application of these formulæ to numerical computation may be greatly facilitated by counting ζ from the true zenith for stars observed directly, and from the reflected zenith for stars observed by reflection; thus confining it to the first and fourth quadrants instead of allowing it to range through the whole circle, and getting rid of the necessity of employing different values for direct and reflection observations. The requisite alterations in $F(\zeta)$ are confined to a few changes of sign, after which it assumes the forms

$$F_1(\zeta) = \pm A_1 \sin \zeta + B_1 \cos \zeta \tag{88}$$
$$F_2(\zeta) = \pm A_1 \sin \zeta - B_2 \cos \zeta \tag{89}$$
$$F_3(\zeta) = \pm A_2 \sin \zeta - B_2 \cos \zeta \tag{90}$$
$$F_4(\zeta) = \pm A_2 \sin \zeta + B_1 \cos \zeta \tag{91}$$

the upper signs applying when the clamp is west, and the lower when it is east. By the substitution of these values in equations (63) to (83), all indeterminate symbols

are eliminated, and a series of observation equations result from which $\delta\varphi$, A_1, A_2, B_1, and B_2 can be determined by the method of least squares. They are as follows:

Observation Equations with Clamp West.

$$0 = \delta_1 - \delta_2 - 2A_1 \sin\zeta_1 - B_1 \cos\zeta_1 - B_2 (2 - \cos\zeta_1) \tag{92}$$
$$0 = \delta_6 - \delta_3 - 2A_2 \sin\zeta_6 - B_1 \cos\zeta_6 - B_2 (2 - \cos\zeta_6) \tag{93}$$
$$0 = \delta_5 - \delta_4 + 2A_2 \sin\zeta_5 + B_1 \cos\zeta_5 + B_2 (2 - \cos\zeta_5) \tag{94}$$
$$0 = \delta_6 - \delta_5 + 2\delta\varphi - A_2 (\sin\zeta_6 + \sin\zeta_5) - B_1 (\cos\zeta_6 + \cos\zeta_5) - 2B_2 \tag{95}$$
$$0 = \delta_1 + \delta_6 - 2\varphi - \delta\zeta_1 - A_1 \sin\zeta_1 - A_2 \sin\zeta_6 - B_1 (\cos\zeta_1 + \cos\zeta_6) - 2B_2 \tag{96}$$
$$0 = \delta_1 - \delta_5 - 2\varphi - \delta\zeta_1 + 180^\circ - A_1 \sin\zeta_1 - A_2 \sin\zeta_5 - B_1 (\cos\zeta_1 + \cos\zeta_5) - 2B_2 \tag{97}$$
$$0 = 180^\circ + \theta_s - \theta_n + (A_1 + A_2) \tag{98}$$
$$0 = 180^\circ + \theta_s - \theta_0 + (B_1 + B_2) \tag{99}$$

Observation Equations with Clamp East.

$$0 = \delta_1 - \delta_2 - 2A_2 \sin\zeta_1 + B_1 \cos\zeta_1 + B_2 (2 - \cos\zeta_1) \tag{100}$$
$$0 = \delta_6 - \delta_3 - 2A_1 \sin\zeta_6 + B_1 \cos\zeta_6 + B_2 (2 - \cos\zeta_6) \tag{101}$$
$$0 = \delta_5 - \delta_4 + 2A_1 \sin\zeta_5 - B_1 \cos\zeta_5 - B_2 (2 - \cos\zeta_5) \tag{102}$$
$$0 = \delta_6 - \delta_5 + 2\delta\varphi - A_1 (\sin\zeta_6 + \sin\zeta_5) + B_1 (\cos\zeta_6 + \cos\zeta_5) + 2B_2 \tag{103}$$
$$0 = \delta_1 + \delta_6 - 2\varphi - \delta\zeta_1 - A_1 \sin\zeta_6 - A_2 \sin\zeta_1 + B_1 (\cos\zeta_1 + \cos\zeta_6) + 2B_2 \tag{104}$$
$$0 = \delta_1 - \delta_5 - 2\varphi - \delta\zeta_1 + 180^\circ - A_1 \sin\zeta_5 - A_2 \sin\zeta_1 + B_1 (\cos\zeta_1 + \cos\zeta_5) + 2B_2 \tag{105}$$
$$0 = 180^\circ - \theta_s + \theta_n + (A_1 + A_2) \tag{106}$$
$$0 = 180^\circ + \theta_s - \theta_0 + (B_1 + B_2) \tag{107}$$

Observation Equations with Clamp both West and East.

$$0 = {}_w\delta_1 - {}_e\delta_1 - (A_1 - A_2) \sin\zeta_1 - 2B_1 \cos\zeta_1 - 2B_2 \tag{108}$$
$$0 = {}_w\delta_6 - {}_e\delta_6 + (A_1 - A_2) \sin\zeta_6 - 2B_1 \cos\zeta_6 - 2B_2 \tag{109}$$
$$0 = {}_w\delta_5 - {}_e\delta_5 - (A_1 - A_2) \sin\zeta_5 + 2B_1 \cos\zeta_5 + 2B_2 \tag{110}$$
$$0 = {}_w\delta_2 - {}_e\delta_2 + (A_1 - A_2) \sin\zeta_2 + 2B_2 (1 - \cos\zeta_2) \tag{111}$$
$$0 = {}_w\delta_3 - {}_e\delta_3 - (A_1 - A_2) \sin\zeta_3 + 2B_2 (1 - \cos\zeta_3) \tag{112}$$
$$0 = {}_w\delta_4 - {}_e\delta_4 + (A_1 - A_2) \sin\zeta_4 - 2B_2 (1 - \cos\zeta_4) \tag{113}$$

In connection with equations (92) to (113) the following points may be noted:

1. Equations (100) to (105) may be derived from equations (92) to (97) by interchanging A_1 and A_2, and changing the signs of the terms involving B_1 and B_2.

2. Equations (96) and (97), or (104) and (105), are the analogue of equations (108) to (113), and are intended to be used chiefly with non-reversible circles, to which (108) to (113) are not applicable. In the four groups of equations (92) to (94), (100) to (102), (108) to (110), and (111) to (113), one group is superfluous, and has been given only to afford each computer an opportunity of selecting the three best adapted to his purpose.

3. We have seen that there may be $2n(n+1)$ coefficients in the right-hand member of (8), but if n exceeds unity it will rarely or never be possible to determine them all. The coefficients of the multiple arcs must therefore be neglected, or at least

reduced in number by combining them into groups and employing the mean of each group instead of its individual members; but in either case the generality of the series expressing the flexure will be impaired, and systematic errors will arise similar to those which exist in (13) on account of the impossibility of determining a^{ii}, a^{iv}, etc.

4. At least as early as 1823 the elder REPSOLD believed that if the object and eye ends of a vertical circle were made of the same weight, and interchangeable, the effect of flexure could be eliminated by observing an object both before and after interchanging these parts, and then taking the mean of the two results. According to our theory, the declination resulting from an observation made before the interchange of the objective and eye-piece is

$$\delta_0 = \delta \pm \delta\varphi \pm F_0(\zeta) \mp F_m(\zeta) \tag{114}$$

and after the interchange

$$\delta_0 = \delta' \pm \delta\varphi \mp F_{0+2}(\zeta) \pm F_{m+2}(\zeta) \tag{115}$$

where m is the number of the quadrant in which ζ is situated. Taking the mean

$$\delta_0 = \tfrac{1}{2}(\delta + \delta') \pm \delta\varphi \pm \tfrac{1}{2}[F_0(\zeta) - F_{0+2}(\zeta)] \mp \tfrac{1}{2}[F_m(\zeta) - F_{m+2}(\zeta)] \tag{116}$$

As ζ must be either in the first or fourth quadrant, m must be either 1 or 4, and the flexure correction in (116) can have only two different forms. If they are designated by the letters G and H, then

$$2G = + [F_0(\zeta) - F_{0+2}(\zeta)] - [F_1(\zeta) - F_3(\zeta)] \tag{117}$$

$$2H = + [F_0(\zeta) - F_{0+2}(\zeta)] - [F_4(\zeta) - F_2(\zeta)] \tag{118}$$

and the development of the functional symbols gives

$$\begin{aligned} 2G = &+ (B_{21} - B_{23}) + (B_{31} - B_{34}) + (B_{41} - B_{45}) + (B_{51} - B_{56}) \\ &+ (A_{12} - A_{11}) \sin \zeta + (B_{12} - B_{11}) (\cos \zeta - 1) \\ &+ (A_{23} - A_{21}) \sin 2\zeta + (B^{23}_{24} - B^{21}_{22}) \cos 2\zeta \\ &+ (A^{34}_{35} - A^{31}_{32}) \sin 3\zeta + (B^{34}_{35} - B^{31}_{32}) \cos 3\zeta \\ &+ (A^{45}_{46} - A^{41}_{42}) \sin 4\zeta + \left(B^{45}_{46\,47} - B^{41}_{42\,43}\right) \cos 4\zeta \\ &+ \left(A^{56}_{57\,58} - A^{51}_{52\,53}\right) \sin 5\zeta + \left(B^{56}_{57\,58} - B^{51}_{52\,53}\right) \cos 5\zeta \\ &+ \&c. \end{aligned} \tag{119}$$

$$\begin{aligned} 2H = &+ (B_{21} - B_{23}) + (B_{31} - B_{34}) + (B_{41} - B_{45}) + (B_{51} - B_{56}) \\ &+ (A_{11} - A_{12}) \sin \zeta + (B_{12} - B_{11}) (\cos \zeta - 1) \\ &+ (A_{22} - A_{24}) \sin 2\zeta + (B^{23}_{22} - B^{21}_{24}) \cos 2\zeta \\ &+ (A^{37}_{32} - A^{36}_{35}) \sin 3\zeta + (B^{34}_{33} - B^{31}_{36}) \cos 3\zeta \\ &+ (A^{44}_{43} - A^{48}_{47}) \sin 4\zeta + \left(B^{45}_{44\,43} - B^{41}_{48\,47}\right) \cos 4\zeta \\ &+ \left(A^{55}_{54\,53} - A^{510}_{59\,58}\right) \sin 5\zeta + \left(B^{56}_{55\,54} - B^{51}_{510\,59}\right) \cos 5\zeta \\ &+ \&c. \end{aligned} \tag{120}$$

Formulæ (119) and (120) show that the effect of flexure cannot be completely eliminated by the method under consideration unless the coefficients which occur in the right-hand member of (8) for values of ζ ranging from 0° to 180° are repeated in the same order for values ranging from 180° to 360°, in which case the total number of coefficients will be reduced from $2n(n+1)$ to $n(n+1)$. A comparison of (119) and (120) with (122) shows that the flexure is more completely eliminated by the method of observing described in the next paragraph than by the procedure now under consideration; and this is very fortunate, because the complicated illuminating apparatus of modern instruments renders the interchange of the objective and eye-piece so difficult that it is seldom or never attempted.

5. Apparently in consequence of BESSEL's investigation, there has come into vogue a method of determining the positions of objects by observing them in four different ways—namely, both directly and by reflection, with clamp successively west and east—and regarding the mean of the results as final. According to our theory we then have

$$\begin{aligned}\delta_0 = &+ \tfrac{1}{4}({}_w\delta_d + {}_w\delta_r + {}_e\delta_d + {}_e\delta_r) \pm \delta\varphi \\ &\mp \tfrac{1}{4}[F_1(\zeta) - F_2(\zeta)]_w \mp \tfrac{1}{4}[F_3(\zeta) - F_4(\zeta)]_e\end{aligned} \tag{121}$$

where the direct and reflection observations are distinguished by the subscripts d and r, and the upper and lower signs apply respectively to stars at their upper and lower culminations. The expansion of the functional symbols gives

$$\begin{aligned}[F_1(\zeta) - F_2(\zeta)]_w + [F_3(\zeta) - F_4(\zeta)]_e = &+ (A_{21} - A_{22} + A_{23} - A_{24}) \sin 2\zeta \\ &+ (B^{21}_{22} + B^{23}_{22} - B^{23}_{24} - B^{21}_{24}) \cos 2\zeta \\ &+ (A^{31}_{32} - A^{33}_{32} + A^{34}_{35} - A^{36}_{35}) \sin 3\zeta \\ &+ (B^{31}_{32} + B^{34}_{33} - B^{34}_{35} - B^{31}_{36}) \cos 3\zeta \\ &+ (A^{41}_{42} - A^{44}_{43} + A^{45}_{46} - A^{48}_{47}) \sin 4\zeta \\ &+ \left(B^{41}_{42} + B^{45}_{44} - B^{45}_{46} - B^{41}_{48}\right) \cos 4\zeta \\ &+ \left(A^{51}_{52} - A^{55}_{54} + A^{56}_{57} - A^{510}_{59}\right) \sin 5\zeta \\ &+ \left(B^{51}_{52} + B^{56}_{55} - B^{56}_{57} - B^{51}_{510}\right) \cos 5\zeta \\ &+ \&c.\end{aligned} \tag{122}$$

All terms depending upon once the zenith distance have disappeared from (122); and of the terms depending upon multiples of the zenith distance, the cosine terms near the zenith, and the sine terms near the horizon, are more or less completely eliminated even in the most unfavorable cases; while if any of these terms happen to have a coefficient consisting of n identical values of A or B, it necessarily vanishes. When in addition to these theoretical advantages it is remembered that the method in question is elegant, convenient, and avoids all troublesome changes in the arrangement of the parts of an instrument, there can be no doubt that it is the most satisfactory procedure hitherto devised for freeing an observed declination from the effect of flexure.

If we put

$$*\delta = \tfrac{1}{4}({}_w\delta_d + {}_w\delta_r + {}_e\delta_d + {}_e\delta_r) \tag{123}$$

and neglect the quantity $\tfrac{1}{4}[F_1(\zeta) - F_2(\zeta)]_w + \tfrac{1}{4}[F_3(\zeta) - F_4(\zeta)]_e$, then (121) may be written

$$*\delta = \delta_0 \mp \delta\varphi \tag{124}$$

and by using it to eliminate $\delta_0 \mp \delta\varphi$ from equations (46) to (57) the following expressions result:

For Clamp West,

$$0 = \delta_1 - *\delta_1 - A_1 \sin\zeta_1 - B_1 \cos\zeta_1 - B_2 \tag{125}$$
$$0 = \delta_2 - *\delta_2 + A_1 \sin\zeta_2 - B_2 \cos\zeta_2 + B_2 \tag{126}$$
$$0 = \delta_3 - *\delta_3 + A_2 \sin\zeta_3 - B_2 \cos\zeta_3 + B_2 \tag{127}$$
$$0 = \delta_4 - *\delta_4 - A_2 \sin\zeta_4 + B_2 \cos\zeta_4 - B_2 \tag{128}$$
$$0 = \delta_5 - *\delta_5 + A_2 \sin\zeta_5 + B_1 \cos\zeta_5 + B_2 \tag{129}$$
$$0 = \delta_6 - *\delta_6 - A_2 \sin\zeta_6 - B_1 \cos\zeta_6 - B_2 \tag{130}$$

For Clamp East,

$$0 = \delta_1 - *\delta_1 + A_2 \sin\zeta_1 + B_1 \cos\zeta_1 + B_2 \tag{131}$$
$$0 = \delta_2 - *\delta_2 - A_2 \sin\zeta_2 + B_2 \cos\zeta_2 - B_2 \tag{132}$$
$$0 = \delta_3 - *\delta_3 - A_1 \sin\zeta_3 + B_2 \cos\zeta_3 - B_2 \tag{133}$$
$$0 = \delta_4 - *\delta_4 + A_1 \sin\zeta_4 - B_2 \cos\zeta_4 + B_2 \tag{134}$$
$$0 = \delta_5 - *\delta_5 - A_1 \sin\zeta_5 - B_1 \cos\zeta_5 - B_2 \tag{135}$$
$$0 = \delta_6 - *\delta_6 + A_1 \sin\zeta_6 + B_1 \cos\zeta_6 + B_2 \tag{136}$$

When the stars to be dealt with have all been observed in four positions of the instrument, equations (125) to (136), in combination with (98), (99), (106), and (107), will probably be more convenient for determining the flexure coefficients than equations (92) to (113).

6. Instead of using the nadir determined over a basin of mercury by means of a collimating eye-piece, some observers prefer to employ that determined from one or more stars, each of which has been observed both directly and by reflection; or that determined by taking the mean of the results given by a collimating eye-piece and several such stars. To discover the precise effect of this process we make use of equations (46) to (57), and by equating each of the several expressions for a declination observed directly to the corresponding expression for a declination observed by reflection, we find that for a star south of the zenith, with clamp west, or north of the zenith with clamp east

$$N + F_0(\zeta) = \pm 90^\circ + \tfrac{1}{2}(\theta + \theta') + \tfrac{1}{2}[F_1(\zeta) + F_2(\zeta)] \tag{137}$$

and for a star north of the zenith, with clamp west, or south of the zenith with clamp east

$$N + F_0(\zeta) = \pm 90^\circ + \tfrac{1}{2}(\theta + \theta') + \tfrac{1}{2}[F_3(\zeta) + F_4(\zeta)] \tag{138}$$

in which θ and θ' are respectively the circle readings for the direct and reflection observations, and the double sign is to be taken positive or negative according as the

clamp is west or east. It therefore appears that whenever the flexure corrections are either neglected or imperfectly known, the effect of this process is to make the nadir point a function of the zenith distances of the stars employed, and thus to substitute an unstable point for the fixed one given by the collimating eye-piece. Such a substitution is always undesirable, and in fundamental work it is absolutely fatal.

CONCLUDING REMARKS.

1. Whenever there are terms in the flexure depending upon multiples of the zenith distance, it is clear from what precedes that in general their effect cannot be completely eliminated by any known method. The only resource is to diminish them as much as possible by reducing the total flexure to a minimum; and that should be done in the construction of all instruments, but especially in such as are intended for fundamental work. The convenience of instruments having a bent telescope with the eye-piece at one end of the axis is evident, but as the excessive flexure which they exhibit is not so well known, some examples of it have been collected in the accompanying table. Of the transits there referred to, No. 1 belongs to the Greenwich Observatory; Nos. 2 and 3, to the United States Hydrographic Office; No. 4, to the Observatory of Princeton College; and all the others to the United States Transit of Venus Commission. The data respecting No. 1 have been taken from the Memoirs of the Royal Astronomical Society, Vol. 37, p. 62; and the data respecting No. 4 have been kindly furnished by Prof. C. A. YOUNG. Nos. 5 to 12 were designed by the present writer.

Principal Dimensions and Coefficients of Flexure of Certain Transit Instruments having Broken Telescopes.

Reference No.	Maker's Name and Number.	Focal Distance.	Clear Aperture.	Length of Axis Between Ys.	Diameter of Pivots.	Diameter of Axis at Shoulders of Ys.	Diameter of Axis at Junction with Cube.	Size of Cube.	Flexure Coefficient.
		in.	in.	in.	in.	in.	in.	in. in.	s.
1	BRAUER; St. Petersburg	31	2.62	....	....	....	....	.....	0.211
2	E. KAHLER, Washington, No. 1	30	2.50	19.12	1.25	1.50	2.00	2.80 × 3.00	.55
3	" " No. 2	30	2.50	19.12	1.25	1.50	2.00	2.80 × 3.00	.54
4	" " No. 145	32	2.75	18.87	1.50	1.9	5.00	5.50	.100
5	STACKPOLE & BRO., New York, No. 1497	30	2.55	19.00	1.38	1.62	3.00	3.10 × 3.50	.424
6	" " No. 1502	30	2.55	19.00	1.38	1.62	3.00	3.10 × 3.50	.507
7	" " No. 1503	30	2.55	19.00	1.38	1.62	3.00	3.10 × 3.50	.282
8	" " No. 1504	30	2.55	19.00	1.38	1.62	3.00	3.10 × 3.50	.248
9	" " No. 1505	30	2.55	19.00	1.38	1.62	3.00	3.10 × 3.50	.351
10	" " No. 1506	30	2.55	19.00	1.38	1.62	3.00	3.10 × 3.50	.475
11	" " No. 1507	30	2.55	19.00	1.38	1.62	3.00	3.10 × 3.50	.303
12	" " No. 1508	30	2.55	19.00	1.38	1.62	3.00	3.10 × 3.50	0.550

[NOTE.—The value given on page 6 for the flexure coefficient of STACKPOLE & BRO. No. 1505 was determined at Peking, China, from star observations, while that given in the table was determined at Washington, from observations upon a pair of collimators.]

In most of the instruments described in the table the so-called "cube" at the junction of the telescope tube with the axis was not a cube at all, but a parellelopipedon. For Nos. 2 and 3 the sides of the parallelopipedon facing the Ys were 2.80 inches square and 3.00 inches distant from each other; while the similar faces in Nos. 5 to 12 were 3.10 inches square and 3.50 inches apart.

A comparison of the data contained in the table seems to indicate that the magnitude of the flexure depends upon circumstances not entirely within the control of the maker. For example, the instruments numbered from 5 to 12 were all as nearly as possible of the same size and pattern, but their coefficients of flexure in right ascension range from 0.248ˢ to 0.550ˢ. The most plausible explanation of this remarkable range seems to be that it arose from inequalities in the thickness of the metal composing the axes of the instruments; such inequalities being almost certain to occur from unavoidable inaccuracies in the centering of the cores around which the axes were cast. Again, the instruments numbered from 2 to 12 are of three distinct patterns, all having axes of nearly the same length, but of diameters which are respectively 2, 3, and 5 inches at their junctions with the central cube. The corresponding flexure coefficients are 0.54ˢ, 0.39ˢ, and 0.10ˢ, thus apparently indicating that the magnitude of the coefficient is less influenced by the size of the axis than might be supposed from the known theory of the flexure of beams.

It is not easy to mount an objective securely, but it is still more difficult to mount a prism, and the addition of such a part to any instrument necessarily increases the instability of its adjustments. The loss of accuracy from that cause, and from the increased number of optical surfaces, may not be great, but it is a serious question whether the uncertainties entailed by the enormous flexure are not too high a price to pay for the convenience of having the eye-piece so placed that observations can be made with equal facility at all altitudes. However that question may be answered with respect to small portable instruments in which the difficulty of getting at stars near the zenith is a maximum, there can be no doubt that in larger instruments intended to give the utmost accuracy the employment of a bent telescope is a serious mistake.

2. Hitherto vertical collimators have been rare, but certainly not on account of any mechanical difficulty connected with them. Two such collimators are never necessary. One is enough, and very simple mounting will suffice to carry it steadily and at the same time admit of its ready removal when out of use, while its adjustment to verticality can be effected over a basin of mercury seen through the cube of the instrument to which it belongs. Although absolutely essential only with instruments which cannot be rapidly reversed, such a collimator is always exceedingly desirable for determining b_1, and will be of great service in measuring the sum of B_1 and B_2. To find a_2 a collimator, or perhaps a pair of collimators, at an angle of forty-five degrees with the vertical is requisite, but there is some difficulty in arranging suitable mounting for them, and probably the appliances employed should be entirely removable.

3. It is generally agreed that in attempting to map the heavens the most accurate, and at the same time the most economical, mode of procedure is first to construct a fundamental catalogue of a limited number of properly situated stars, and then to refer all other objects to them by means of differential observations. The methods of

observing are materially different in these two operations, and therefore they will be considered separately.

With respect to right ascensions, we have seen that the extent to which flexure can be eliminated by any mere arrangement of the observations is quite uncertain, and the only satisfactory procedure is to determine the flexure constants and use them to free each observed transit from flexure before computing the azimuth, collimation, and clock corrections.

With respect to declinations, the most important points seem to be, first, that whenever nadirs are used they shall be determined by means of a collimating eye-piece over mercury, *and in no other way;* second, that in determining fundamental star places the flexure shall be eliminated, not by the application of corrections, but by the method of observing, as explained in paragraph 5, page 22; third, that the positions of all objects which are not fundamental shall be determined differentially, and proper corrections for flexure shall be applied. For the latter purpose the flexure constants must be known, and they may be determined either from equations (92) to (113) or from equations (125) to (136) as may be most convenient, but in so doing it should not be forgotten that owing to the exceptionally favorable conditions under which collimators are employed (98), (99), (106) and (107) will probably be much the most exact of all the observation equations, and they should be given correspondingly large weights. It may even be thought best to make $(A_1 + A_2)$ and $(B_1 + B_2)$ depend upon them alone, and if so these expressions must be used to eliminate one of the As and one of the Bs from all the other observation equations.

4. It has been shown that when there are terms in the flexure depending upon multiples of the zenith distance, they cannot in general be completely eliminated by any known process whatsoever. It therefore follows that star places derived from a single instrument are likely to be affected by systematic errors, both in right ascension and in declination, which will appear when the work of different instruments is compared. Hitherto it has been customary to trust solely to discussions based upon such comparisons for the more or less complete detection and elimination of the errors in question, but as equal altitude instruments of the zenith telescope class are known to be remarkably free from systematic errors, it is probable that this detection and elimination can be greatly facilitated by their use.

If the transits of a number of stars over the same circle of equal altitude are observed, each star will furnish an observation equation of the form

$$\cos \zeta = \sin \varphi \cos \Delta + \cos \varphi \sin \Delta \cos (\alpha - T' - \Delta T) \qquad (139)$$

in which φ is the latitude of the place of observation, T' the observed time of transit, ΔT the clock correction, and α, Δ, and ζ the right ascension, polar distance, and zenith distance of the star observed. From two such observation equations closely approximate values of ζ and ΔT may be found. Designating them by ζ' and $\Delta T'$, and putting

$$\zeta = \zeta' + d\zeta$$
$$T = T' + \Delta T' + dt$$

we may write

$$\cos (\zeta' + d\zeta) = \sin \varphi \cos \Delta + \cos \varphi \sin \Delta \cos (\alpha - T' - \Delta T' - dt) \qquad (140)$$

Each star will then furnish an observation equation of the form

$$\begin{aligned} 0 = &+[\cos\zeta - \sin\varphi\cos\Delta - \cos\varphi\sin\Delta\cos(\alpha - T' - \Delta T')]R'' \\ &+ \cos\varphi\sin\Delta\sin(\alpha - T' - \Delta T')\,dt - \sin\zeta\,.\,d\zeta \end{aligned} \tag{141}$$

and from all the equations thus obtained dt and $d\zeta$ can be found by the method of least squares. R″ is the number of seconds in radius, and dt and $d\zeta$ will be expressed in seconds of arc.

The most probable values of T and ζ having thus become known, the residuals in the observation equations may be regarded as arising from small errors in the adopted latitude and star places; whence

$$\begin{aligned} \cos\zeta = &+ \sin(\varphi + d\varphi)\cos(\Delta + d\Delta) \\ &+ \cos(\varphi + d\varphi)\sin(\Delta + d\Delta)\cos(\alpha + d\alpha - T) \end{aligned} \tag{142}$$

and each star will furnish an observation equation of the form

$$\begin{aligned} 0 = &+ [\cos\zeta - \sin\varphi\cos\Delta - \cos\varphi\sin\Delta\cos(\alpha - T)]\,R'' \\ &- [\cos\varphi\cos\Delta - \sin\varphi\sin\Delta\cos(\alpha - T)]\,d\varphi \\ &+ [\sin\varphi\sin\Delta - \cos\varphi\cos\Delta\cos(\alpha - T)]\,d\Delta \\ &+ [\cos\varphi\sin\Delta\sin(\alpha - T)]\,d\alpha \end{aligned} \tag{143}$$

If this method is applied to a large group of stars the observations will probably extend over many months, and numerous equations of the form (143) will result. As all will contain $d\varphi$, they should be solved simultaneously, but that will be impracticable if the whole of the unknown quantities are dealt with at once, and therefore the $d\alpha$s and $d\Delta$s must be neglected at first and the solution made for $d\varphi$ alone. Next, the absolute terms must be corrected for the resulting value of $d\varphi$, after which the equations will contain only corrections to the star places, and those relating to different stars will be wholly independent of each other. Observation equations relating to any one star may therefore be combined from any number of observatories, and the simultaneous solution of these equations may be expected to yield very exact corrections to the star's co-ordinates.

5. In observing the sun to determine the position of the vernal equinox, upon which all right ascensions depend, it is not easy to prevent the solar rays from disturbing the adjustments of the instrument employed. Photography seems to afford an escape from this difficulty. Imagine a transit circle so constructed that its eye-piece can readily be removed and a sensitive photographic plate can be inserted just behind its wire system. Then, with the eye-piece in position, stars can be observed and the instrumental constants can be determined in the usual way; while at noon a photographic plate can be inserted and an instantaneous exposure will suffice to give an image of the sun with the transit and declination wires of the instrument imprinted upon it. The position of the sun's center relatively to these wires can be measured, and that, together with the instrumental constants, the circle reading, and the sidereal time of

the exposure will suffice to give an exact determination of the sun's right ascension and declination. Instead of a single photograph, several may be taken if desired, and as the instrument will be exposed to the sun's rays only for a few thousandths of a second, no disturbance of its constants can arise from that cause. So applied, photography would probably yield results superior in accuracy to any hitherto obtained by the usual methods.

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